CONCORD

TRANSPORTATION AND LAND USE STUDY

CONCORD TRANSPORTATION AND LAND USE STUDY

CONCLUSIONS AND RECOMMENDATIONS

Prepared for
THE CITY OF CONCORD, CALIFORNIA

by

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HWY. 242
HWY. 680
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CONCORD BLVD.
CLAYTON ROAD
MONUMENT BLVD.
TREAT BLVD.
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Sun Valley Shopping Ctr.
CITY OF CONCORD SEWER FARM
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SUMMARY

MAJOR FINDINGS

Analysis of transportation conditions in the Concord area suggests that we may be nearing the end of the era in which the private automobile both determined the urban pattern and dictated our way of life. Evidence gathered in this study indicates that the use of the private automobile and the mobility it has afforded will be severely constricted in the near future unless other modes of travel are provided. Projected traffic for 1980 will result in severe congestion along critical segments of the Concord street system, such as portions of Concord Avenue, Monument Boulevard, Oak Grove Road, Treat Boulevard, and Ygnacio Valley Road. In the southern portion of Concord, Treat Boulevard and Ygnacio Valley Road will together need to accommodate approximately 190,000 person trips per average work day in 1990. This congestion is expected to occur even if all major street improvements proposed in the City's General Plan are constructed.

Even BART will do little to remedy transportation problems within the City. Without local transit, the same City streets now providing access to the freeways, and which are already overcongested, must serve BART riders driving their private autos to the station.

By 1980 the newly expanded Interstate 680 will be carrying daily traffic volumes per lane surpassing those carried when it was a four lane facility and motorists will be experiencing the same congestion problem associated with the freeway prior to the expansion to six lanes. This problem will worsen by 1990 with a projected two to three-fold increase in total traffic volume over current levels.

At a time when suburban areas were just beginning to develop, when land was cheap and development was sparse, it was possible to expand roadways to meet the need of increasing travel demand. Now, however, with higher land costs, rights-of-way confined by existing development, and the physical and social disruption now associated with major roadway improvement, such programs are often no longer acceptable from a social, fiscal, or economic standpoint.

The proposed cross-town freeway, recently deleted by the City Council, illustrates this contemporary situation well. Construction of this roadway would have cost three to four times the capital cost of the proposed County transit system, removed about 200 acres of land from the City's property tax rolls, bisected established residential and commercial districts, displaced homes and businesses, and disrupted one of the City's major open space resources -- Inner Lime Ridge. Moreover, the cross-town freeway would have done little to improve travel conditions since it would have fed into Interstate 680 which, as just noted, will be operating beyond its capacity by 1980 and will be unable to absorb additional auto use.

Many would like to think these circulation problems can be solved by stopping growth, but such an effort would not bring a real solution, especially in the near future. The projected growth of Concord's population from 1970 to 1990 of 37,500 persons has already taken into consideration the abrupt downward trend in persons migrating to California and the declining national birthrate. Similarly, the projected growth of 29,500 jobs in the Concord area for this same period has accounted for these same trends. The demographic factors responsible for population growth through to the 1990's exist now and cannot be altered. The number of housing units, jobs, and services projected for the 80's and 90's will be necessary to accomodate today's children and young adults.

The real issue then, is how and where to accommodate this growth. A provincial no-growth stance would more than likely worsen the situation by forcing new development into outlying areas, thereby increasing the dependency of this growth on the automobile, disrupting areas with natural resource value, and serving to maintain current travel patterns which overtax already overcrowded roadways.

It is clear then, that a new direction in both transportation and land use planning i.e., a transit-oriented planning approach is needed in Concord. Such a reorientation has been opposed in the past based upon arguments that people will not use public transit and that transit will not "pay its own way." But, as already outlined above, residents in the Concord area will no longer be able to depend upon the private auto for all trip purposes. In fact, even with the implementation of transit, high levels of traffic congestion will still be experienced along major travel corridors such as Treat Boulevard, Ygnacio Valley Road, Monument Boulevard, and Highway 680. Transit will serve to make these congestion problems much more manageable, however.

The evidence gathered clearly suggests that the Concord area will be unable to function adequately if local and intra-County transit is not provided. It is ironic that without public transit, the mobility which people have sought with the private auto will be lost, and transit will then be necessary to enable people to use their auto more effectively.

Moreover, the cost to local taxpayers of providing for a balanced transportation system, relying on both transit and autos, would be equal to or less than the cost of expanding the City's roads to the level proposed in the current General Plan and relying solely on the auto for local transportation. Fiscal analysis indicates that to implement transit, Concord taxpayers would incur a 35 cent tax increment per $100 of assessed valuation. The introduction of transit would then provide the basis for a workable circulation system and, after a decade, a lessening of City road expenditures. Without transit, an adequate road system would incur impossible social and dollar costs.

MAJOR RECOMMENDATIONS

The following major recommendations are based upon this study's population and employment projections and upon analysis of the City's current General Plan provisions:

1. The City of Concord should make an immediate commitment to local and intra-county transit. Full support should be given to the November transit tax issue initiated by the Contra Costa Local Transportation Implementation Program. In the event that this transit tax rate is rejected by the voters, a second effort should be made to gain public approval of transit bonds, but based upon a reduced district. Concord should seek cooperation in this effort from Walnut Creek, Clayton and Pleasant Hill. If this effort fails, Concord should initiate bus transit service on its own within the Central Area. [1]

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1 The term Central Area, as used in this report, refers to the area as delineated on the study area map opposite page 1. The Central Area includes the Sun Valley Shopping Center, the west Concord industrial area, other industrial and commercial properties along Willow Pass Road and Concord Avenue, the Park and Shop Center and adjoining lands to both the north and south, downtown commercial areas about the Plaza, and properties northwest of the Concord BART Station.

This service should be coordinated with, or operated as part of, interim BART service from Pittsburg and Antioch to the Concord BART station via Clayton Road.

2. City capital improvements accommodating transit operation should be given priority over roadway improvements benefiting solely private auto use. Transit-accommodating improvements would include provisions for busways separate from automobile roadways, exclusive all-day bus lanes within the existing auto network (in place of expanded lanes for additional auto use), and exclusive peak hour bus lanes within the existing automobile network. Such priorities would guarantee the success of transit by providing facilities which would permit faster and more convenient service.

3. Bike and pedestrian accommodations should be considered as a major element in the City's transportation system and appropriate provisions should be made to accommodate these two modes of travel. A complete network of bikeways should be constructed throughout the City with emphasis on access to local and regional transit. Safe bicycle storage should be provided at transit and other popular destinations. These improvements should be given a priority equal to or greater than that assigned to roadway improvements which benefit only private auto use.

4. The City's General Plan land use provisions, and supporting regulations and ordinances, should be modified to help promote a land use pattern which both reduces dependency on the private auto and supports more efficient transit service. These modifications should promote more intensification of use along major transit-served corridors, and at major transportation nodes, particularly Concord's Central Area. Additionally, a limitation should be placed on the amount of offstreet parking provided by new commercial development in areas with high transit service.

5. The City's Central Area transportation system should be totally restructured to enable this area (see footnote 1 and study area map opposite page 1) to function as an integrated commercial district and to take fuller advantage of the convergence here of local and regional transit. Major proposals made herein include (1) provision of a separate busway linking the BART station area with Sun Valley Shopping Center and the other intervening subareas, (2) reorganization of the street pattern in the Plaza vicinity to permit this area to serve as a pedestrian-oriented commercial area, and (3) redirection of through auto movements from Willow Pass Road, in the vicinity of Park and Shop, to Clayton Road in order to permit Willow Pass Road to properly function as the primary access route for adjoining businesses.

6. Top priority should be given to quickly establishing a clear, explicit policy for Concord's Central Area. The role of commercial concentrations in the City remains unresolved. This issue must be resolved expeditiously as it will have an important bearing on the land use and transportation options set forth in this report and will be a key determinant in establishing capital improvement priorities.

INTRODUCTION

STUDY PURPOSES

The Concord Transportation and Land Use Study has involved two phases and purposes: (1) to reassess Concord General Plan policies in light of the recent deletion from the Plan of the proposed east-west freeway route through southern Concord, and (2) to determine what basic modifications in Concord's present transportation and land use policies are necessary in light of latest projected travel demands (minus the deleted freeway route) resulting from future residential, commercial, and industrial growth.

Results of the second phase are presented in this report in the form of recommendations to the Planning Commission and City Council. These recommendations specify needed transportation system modifications and required new elements, and identify major land use policies necessary to support these transportation improvements. Furthermore, this report indicates revisions to the City's General Plan and related implementation devices (zoning ordinance, capital improvement program) necessary to carry out the transportation and land use recommendations.

The first phase involved testing the compatibility of the General Plan-designated future land use pattern with the transportation system recommended in the same Plan. Results of that analysis have been compiled in a Phase 1 report submitted earlier in the study program.[2]

STUDY APPROACH

Final transportation and land use policy recommendations emerged from the following four-task analytic process:

1. EVALUATION OF THE BASE CASE. At the start of the study, an initial analysis (the Phase 1 report), was prepared comparing General Plan transportation policies as recently amended, and the land uses indicated in the General Plan.[3] This analysis assumed current auto usage patterns, and no additional public controls on the rate or location of development. A likely growth pattern was hypothesized in Task 1 to establish a base case or basis for evaluating the alternative future development policies identified in subsequent study tasks.

2. FORMULATION OF TRANSPORTATION AND LAND USE SYSTEM ALTERNATIVES. Based upon insights and conclusions reached in the analysis of the base case, two steps were then taken. The first involved formulating

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[2] Concord Transportation and Land Use Study - Phase 1: General Plan Evaluation, July, 1974.

[3] Ibid.

alternative land use concepts, reflecting both development and conservation concerns of the community. Basic residential, commercial, industrial, and open space land use options were selected and evaluated, using citizen input, city staff appraisal, and consultant analysis.

The second step in option formulation involved identifying transportation systems or sub-systems which were generally compatible with the land use concepts selected above. This procedure of pairing land use concepts with transportation systems again involved citizen and City staff review, plus consultant analysis, to determine the general desirability, applicability, and feasibility of basic transportation choices.

3. EVALUATION OF THE COMPOSITE TRANSPORTATION/LAND USE CONCEPTS. A more in-depth analysis was then undertaken of the composite land use and transportation concepts formulated in Step 2, including assessment of such comparative factors as relative trip generation, modal split prospects, physical and economic feasibility, physical and social impacts, etc.

Chapter 3 of this report will convey the results of the Task 3 assessments in a general balance sheet describing specific affects, advantages and disadvantages of each alternative. These assessments are based upon assumed growth patterns and sequences as identified in the base case in order that issues relating to the rate, timing, and location of growth can be identified and addressed.

4. FINAL CONCLUSIONS AND RECOMMENDATIONS: The assessments made in Task 3 have been reviewed with Concord citizens and involved City staff, and refined into the final policy recommendations presented in this report.

CITIZEN INPUT PROCEDURES. Beginning with Task 2, intense citizen involvement was incorporated into the study so that final land use recommendations and transportation proposals would reflect a wide array of community attitudes and desires. The following citizen input specifics were sought by the consultants:

1. Attitudes of community leaders and interested groups regarding transportation and other urban problems, and about possible alternative land use and transportation choices.

2. Attitudes of average Concord citizens including (a) their thoughts on current and future transportation problems and land use needs, and (b) their probable responses to proposed alternative future transportation systems and land use policies.

To realize such substantial community input, two forms of citizen participation were established. The first group of attitudes was gauged through use of a citizens advisory committee made up of representatives of the various interest groups already involved in local political and planning processes. The second set of attitudes - responses of the average citizen - was solicited through the establishment of a randomly selected citizen panel. From a pool of candidates randomly selected by telephone, a twelve-member panel was established that met a representative quota of the key subgroups in Concord's population (middle aged/middle income, female head of household, homeowner, renter, teenager, etc.).

Separate Random Panel and Citizens Advisory Committee meetings included both presentations by the consultants of relevant background information and land use and transportation alternatives to be considered, and solicitation of responses from the Committee and Panel to specific questions and choices. This method had the advantage of allowing continuous feedback at various stages of the study and reflected any shifts in group attitudes emerging after more complete knowledge of the implications of their initial feelings.

ONGOING DEVELOPMENT REVIEW. The procedures and data employed in this study, particularly as they have been conveyed in the supplementary Technical Report, are

organized in a manner which will not only help establish an ongoing review process suitable for specific transportation proposals, but can also be employed in the preparation of environmental impact reports required for both public and private projects.

OPTION ANALYSIS

Again, the General Plan Evaluation has established (1) a Base Case, i. e., urban growth projections to respond to in identifying alternative future transportation and land use policies for Concord; and (2) a basis for comparing and evaluating those alternatives. Summaries of the General Plan Evaluation/Base Case and subsequent Option Evaluation tasks follow.

BASE CASE: GENERAL PLAN EVALUATION

The major findings and conclusions of the first study phase, evaluation of the current Concord General Plan, are summarized below:

1. POPULATION, 1970-1990. Projections indicate that the City of Concord population will total approximately 106,900 persons by 1980, up some 21,900 persons from 1970. This total reflects an increased household growth rate, and a concurrent decrease in household size. Population projections for the total study area which also includes portions of Pleasant Hill, Walnut Creek, and unincorporated County lands west of Highway 680; plus the City of Clayton, portions of Walnut Creek and County lands south of Ygnacio Valley Road, total 125,800 for 1980, up some 32,900 from 1970. For the subsequent 1980-1990 decade, projected growth increments for the City and study area, respectfully, total 15,800 and 20,200 persons, resulting in an estimated 1990 population of 122,500 persons for Concord, and 146,200 persons for the study area. Furthermore, population growth impacts could be further compounded if large tracts of unincorporated land outside the study area, southeast of Clayton, are developed and attract a disproportionate share of Bay Area housing demand.

2. EMPLOYMENT, 1970-1990. 16,000 additional jobs are projected to evolve within the study area between 1970 and 1980, and another 13,500 jobs by 1990. Approximately 26 percent of this projected 1970-1990 employment growth will involve jobs serving the needs of local residents. The remainder would be distributed among basic industries, and professional and business services serving the entire metropolitan region.

3. TRAVEL DEMANDS, 1990. Projected 1990 travel demands generated by the increase in both population and employment in the study area will exceed the capacity of the roadway network proposed in the General Plan. The most significant problems will occur along the Ygnacio Valley Road corridor from Kirker Pass Road to Cowell Road where most of the new population growth will occur. Other problem areas include roadways in

the vicinity of Sun Valley Shopping Center, Willow Pass Road in the Central Area, and major crosstown arterials such as Oak Grove, Monument Boulevard, Concord Boulevard, Concord Avenue, Clayton Road, and Treat Boulevard. In portions of the roadway network proposed in the General Plan, road capacities will be exceeded by projected travel demands by 1980. Interstate 680 will continue to be a problem, even with the improvement to six lanes now underway. By 1980, traffic volumes per lane will surpass those levels carried by the present four lane facility. Additionally, traffic forecasts indicate that 1990 volumes on Highway 680 will be two to three times current levels.

4. GROWTH COMMITMENTS. The number of new housing units included in development proposals which have already been approved by the City Council, but have not yet been constructed, will be sufficient to accommodate the projected 1980 population. Consequently, any General Plan changes that seek to alter residential patterns as a means of achieving a better balance between land use and transportation can only apply to and affect population growth projections beyond 1980.

5. RESIDENTIAL LAND USE. There is sufficient vacant land designated for residential use in the General Plan to accommodate growth in excess of that projected for 1990. Furthermore, under-utilized land in the Central Area as well as infilling possibilities in established neighborhoods provide additional land resource potential for residential use.

6. COMMERCIAL LAND USE. The projected demand for retail use and other commercial services exceeds the supply of vacant land presently designated for such purposes. Thus, among the most important planning issues which will be considered in this study are the type, location, and size of commercial centers to be permitted, and policy questions of whether the projected commercial growth should be directed predominately into the Central Area or into already existing, but under-utilized commercial areas; whether certain lands should be redesignated for commercial purposes; or whether some combination of these approaches is required. Because of the potential impacts of commercial facilities on traffic demand, both as employment centers and as business/shopping trip generators, it is essential that land use decisions related to commercial development be closely tied to transportation planning decisions.

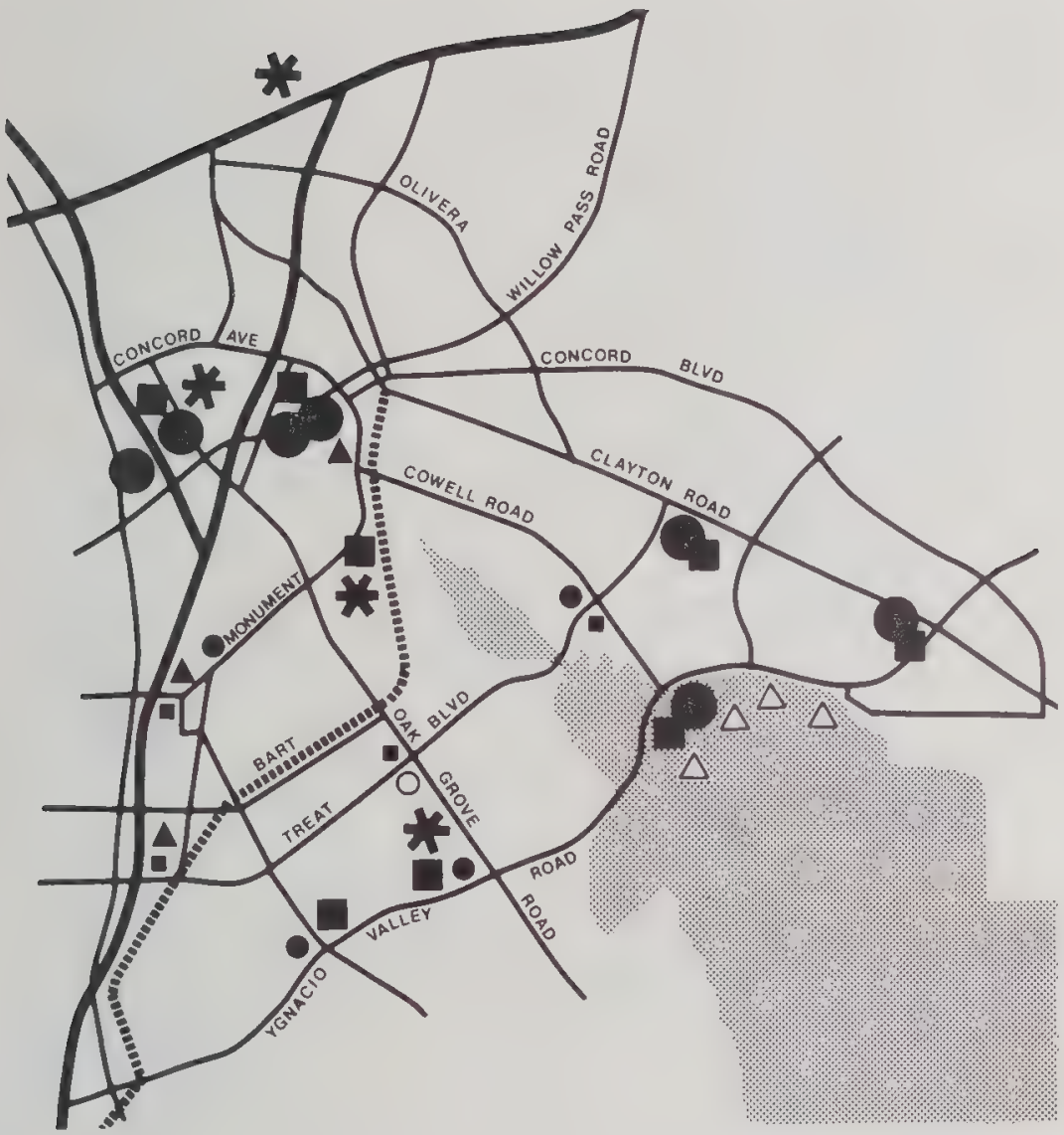
7. ADMINISTRATIVE, RESEARCH AND MANUFACTURING LAND USE. Vacant lands designated for administrative, research, and manufacturing use are sufficient to accommodate demands for space generated by projected growth in basic industries and in commercial services serving regional and subregional needs.

In conclusion, Phase 1 of the Transportation and Land Use Study indicates that significant revisions are needed in the General Plan. Basic modifications to the designated transportation and land use system are crucial in order to avoid widespread community inconvenience, annoyance, and major environmental, fiscal, and economic problems in the near future.

OPTION EVALUATION

After initial identification of a range of reasonable land use and transportation choices (Task 2), these choices were then evaluated, grouped, and refined (Task 3) into the following four options for final study and evaluation:

OPTION 1. AUTOMOBILE-DEPENDENT SCHEME. Combining ideas formulated by both citizen groups, OPTION 1 would involve retaining a transportation system relying solely on the private automobile, but improving that system through adjustment of future land uses to diffuse and



OPTION 1.
AUTOMOBILE-DEPENDENT SCHEME

- MAJOR COMMERCIAL EXPANSION (RETAIL)
- NEW NEIGHBORHOOD SHOPPING CENTER
- LIMITED EXPANSION OF EXISTING NEIGHBORHOOD SHOPPING CENTER
- MAJOR SERVICE EXPANSION (PROFESSIONAL AND PERSONAL)
- MINOR SERVICE EXPANSION
- CLUSTERED LOW DENSITY RESIDENTIAL
- LOCATION FOR NEW MEDIUM DENSITY RESIDENTIAL
- LOCATION FOR NEW HIGH DENSITY RESIDENTIAL
- MAJOR ADMINISTRATION, RESEARCH AND MANUFACTURING EXPANSION
- OPEN SPACE

balance traffic loads throughout the community, thereby mitigating current and projected traffic problems and creating a feasible road network.

Specifically, medium and high density housing (as defined in the study)[4] would be concentrated in the Central Area and at other points of regional and local access (BART stations, Highway 680/Highway 24 interchange). To minimize population growth, only very low density housing would be allowed everywhere else. The Random Panel felt that low density cluster housing should also be considered for highly selected areas within open space lands south of Ygnacio Valley Road to offset the public costs of procurring those lands.

New regional commercial development would be permitted only in the environs of the present Sun Valley Shopping Center to avoid increases of regional traffic within Concord's internal road network. Concord-serving comparison retail growth would be divided between the Central Area and one or two outlying community centers in the southern and/or southeastern sections of the City. The outlying community center(s) would provide a more convenient alternative to Sun Valley Center and would reduce crosstown traffic. New convenience retail would be concentrated at present neighborhood center locations with the addition of one or two more such centers as a possibility. Only concentrated or clustered rather than strip commercial development would be allowed.

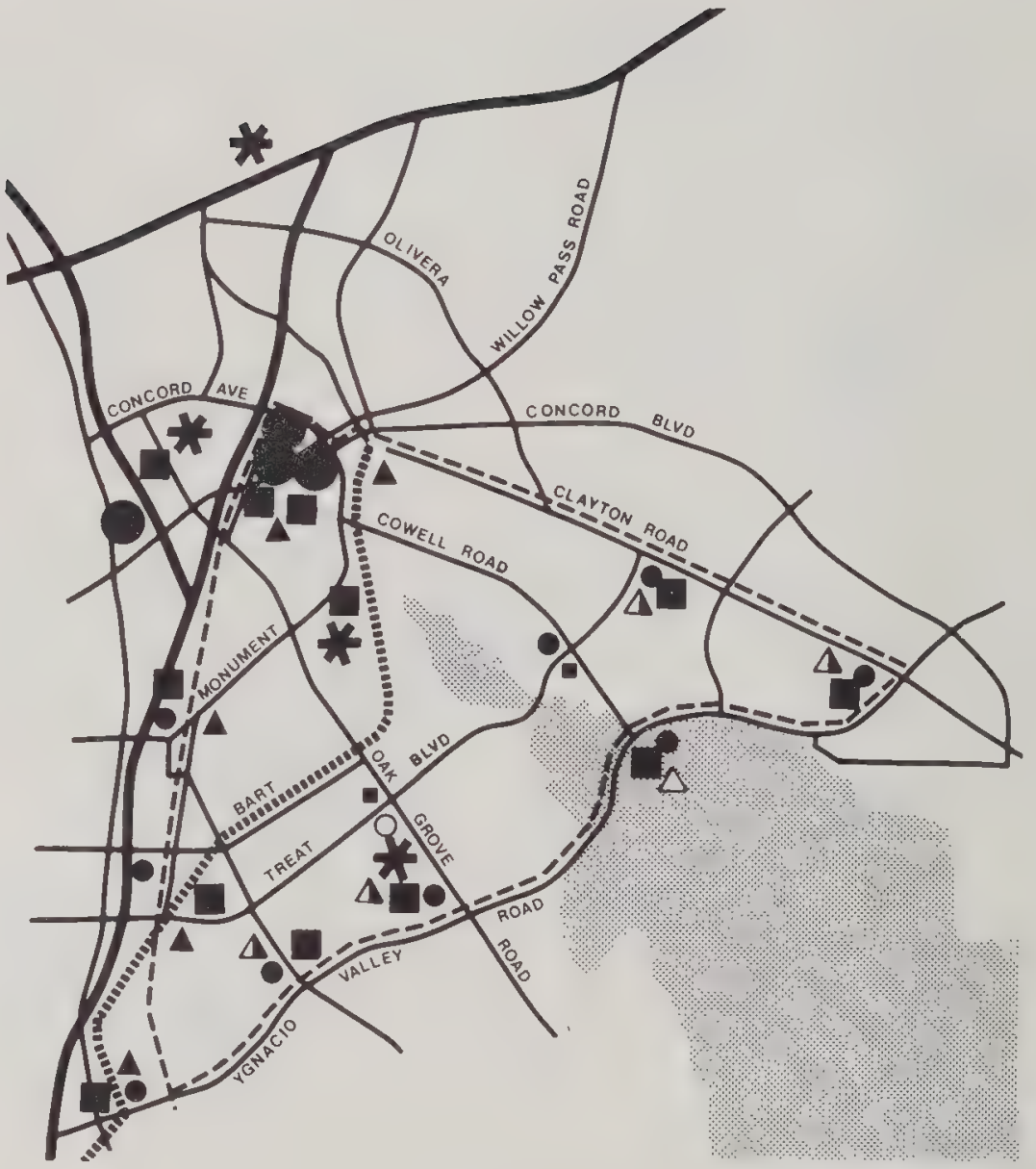
Land use policy for professional and business services would concentrate the largest portion of new office development within the Central Area. Secondary portions would be accommodated in outlying community centers, again to reduce much of the need for crosstown driving to the central Area. Finally, some local-serving and limited purpose office space increases would be distributed among the neighborhood shopping centers.

4 Medium density housing= 6 to 8 dwelling units per net acre; high density= more than 18 dwelling units per net acre. The Citizens Advisory Committee chose to allow medium density housing only, fearing what they felt would be adverse social impacts of high density housing.

OPTION 2. TRANSIT-DEPENDENT SYSTEM- MULTI-CENTERED. This second option was identified principally by the consultants, and is based on strong evidence which has emerged from this study suggesting that a local transportation system relying solely on the private automobile will not function adequately in the Concord case. Therefore, OPTION 2 would introduce public transit service on regular schedules along all major travel corridors. A peripheral or triangular transit loop would be emphasized under this option, utilizing Clayton Road, Ygnacio Valley Road, and the Southern Pacific Railroad right-of-way as primary transit corridors. Higher concentrations of both population and commercial uses would be permitted along these routes. Additionally, secondary transit service would be provided throughout Concord neighborhoods on a demand response ("dial-a-bus") basis.

Medium and high density housing would be encouraged in the Central Area and along peripheral transit corridors. As in OPTION 1, the existing suburban profile of low density housing would be maintained everywhere else.

A major portion of projected commercial expansion (retail and service) would also be directed into the Central Area where it could be served by both local and regional transit. Additionally, more intensive commercial development than that permitted in the auto-dependent option would be allowed in outlying community and neighborhood centers located along the peripheral transit corridors. Potential locations for a community shopping center (comparison retail activity, professional and business services) would include the Clayton Road/Treat Boulevard and Clayton Road/Ygnacio Valley Road intersections, or the quarry site in the Newhall Ranch open space area (as opted for by the Random Panel). Neighborhood-serving convenience retail and office expansion would also be accommodated principally in concentrated nodes along the peripheral transit corridors (Oak Grove Road/Ygnacio Valley Road intersections, S.P.R.R./Ygnacio Valley Road and S.P.R.R./Monument Blvd. intersections).



OPTION 2.

TRANSIT-DEPENDENT SYSTEM-MULTI-CENTERED

- MAJOR COMMERCIAL EXPANSION (RETAIL)
- NEW NEIGHBORHOOD SHOPPING CENTER
- LIMITED EXPANSION OF EXISTING NEIGHBORHOOD SHOPPING CENTER
- MAJOR SERVICE EXPANSION (PROFESSIONAL AND PERSONAL)
- MINOR SERVICE EXPANSION
- CLUSTERED LOW DENSITY RESIDENTIAL
- LOCATION FOR NEW MEDIUM DENSITY RESIDENTIAL
- LOCATION FOR NEW HIGH DENSITY RESIDENTIAL
- MAJOR ADMINISTRATION, RESEARCH AND MANUFACTURING EXPANSION
- PROPOSED TRANSIT ROUTE
- OPEN SPACE

OPTION 3. TRANSIT-DEPENDENT SYSTEM - BINODAL. This option would adopt the land use desires communicated principally by the Random Panel. Like Option 2, this option would also introduce public transit service on regular schedules along all major transit corridors, but would emphasize one primary transit-converging corridor (Clayton Road) rather than three. This option would accommodate higher concentrations of population and commercial uses along that corridor, and would stress the two ends as major activity nodes (Central Area and vicinity of Clayton Road/Ygnacio Valley Road intersection). Secondary fixed transit routes would be scheduled for the remaining major travel corridors. Additionally, demand response ("dial-a-bus") service would be provided throughout Concord neighborhoods.

Medium and high density housing would be permitted primarily in the Central Area and along the Clayton Road transit corridor. Higher density residential uses would also be permitted at other points of local and regional access (Highway 680/Highway 24 intersection, Highway 24/Highway 4 intersection , BART stations).

As with OPTION 2, major portions of projected commercial expansions (retail and service) would be directed into the Central Area where they could be served by regional and local transit. In addition, significant portions of commercial expansion (comparison retail in particular) would be encouraged at the southeastern end of the Clayton Road transit corridor. The location of the southeastern center would involve a site suboption of either the Ygnacio Valley Road/Clayton Road intersection area, or the quarry site on the Newhall Ranch open space lands (near the Cowell Road/Ygnacio Valley Road intersection). The former site was favored by the Citizens Advisory Committee, the latter by the Random Panel. Water service constraints may discourage development of the quarry site, however. Neighborhood-serving (convenience) retail expansion would be directed primarily to the Clayton Road corridor and to existing neighborhood centers along the secondary, fixed transit routes.

Office expansion would be accommodated in combination with retail development in the Central Area, at the southeast community node, and in the more localized neighborhood centers.

OPTION 3.
TRANSIT-DEPENDENT SYSTEM-BINODAL

- MAJOR COMMERCIAL EXPANSION (RETAIL)
- NEW NEIGHBORHOOD SHOPPING CENTER
- LIMITED EXPANSION OF EXISTING NEIGHBORHOOD SHOPPING CENTER
- MAJOR SERVICE EXPANSION (PROFESSIONAL AND PERSONAL)
- MINOR SERVICE EXPANSION
- CLUSTERED LOW DENSITY RESIDENTIAL
- LOCATION FOR NEW MEDIUM DENSITY RESIDENTIAL
- LOCATION FOR NEW HIGH DENSITY RESIDENTIAL
- MAJOR ADMINISTRATION, RESEARCH AND MANUFACTURING EXPANSION
- PROPOSED TRANSIT ROUTE
- OPEN SPACE

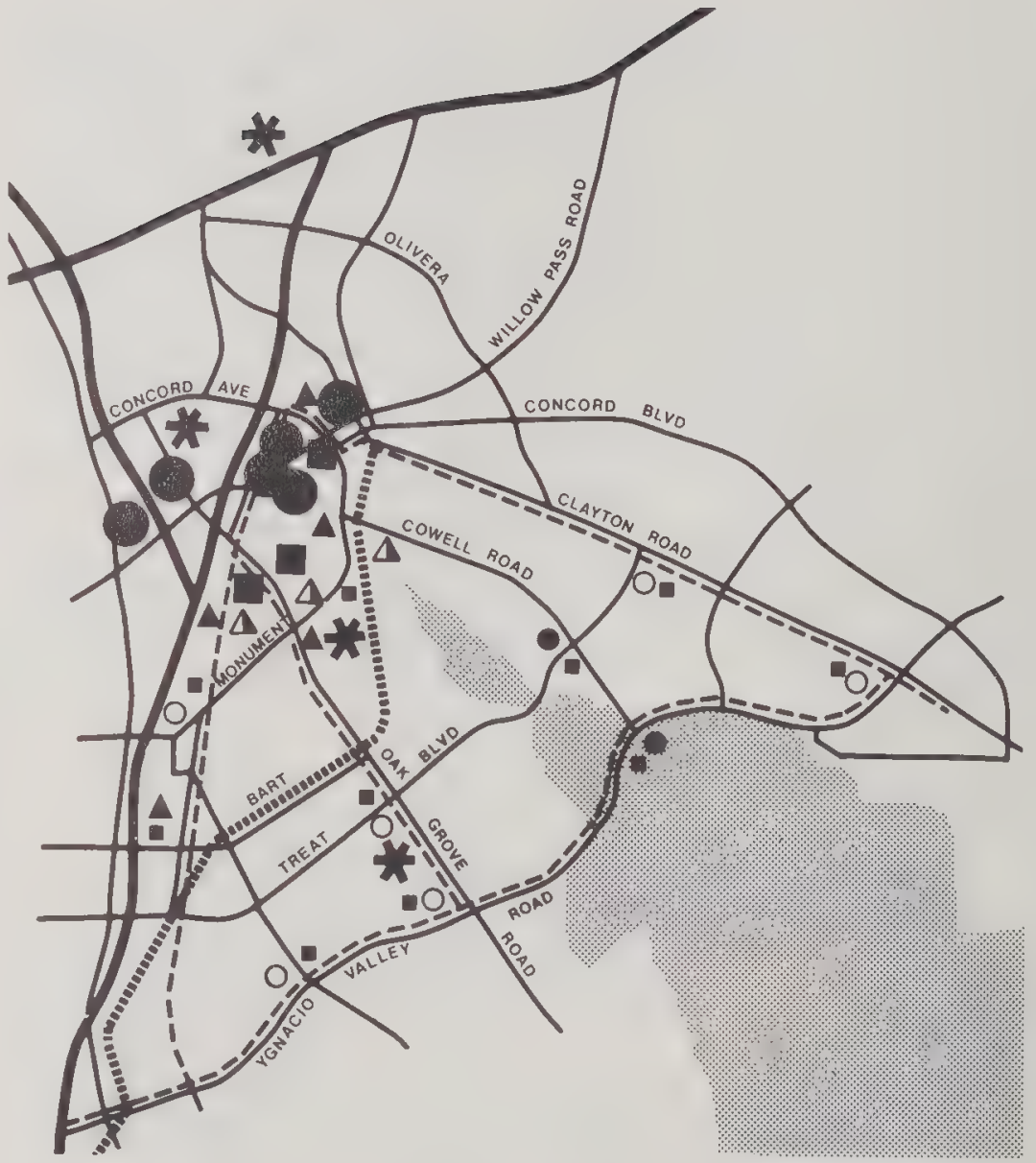
OPTION 4. TRANSIT-DEPENDENT SYSTEM - SINGLE CENTER. This option would emphasize the Central Area as the dominant commercial and social center of the Concord community. A central focal point for converging transit routes would be developed by directing the major portions of new commercial activity into the Central Area. The downtown area would be revitalized, creating a single, highly identifiable commercial and social center for the community.

Clustered medium and high density housing would be permitted in the Central Area and along major inbound transit arterials (Southern Pacific Railroad right-of-way, Oak Grove Road, Cowell Road, Clayton Road, Concord Boulevard), particularly in the vicinity of the BART stations. The remaining areas would be maintained as low density neighborhoods.

All comparison retail and extensive convenience retail expansion would be directed into the Central Area. Outlying commercial development would be limited to that which serves the needs of residents within the immediate area.

A major portion of office development would also be concentrated in the Central Area. Only small, limited-purpose office development would be permitted in decentralized locations, principally in neighborhood shopping centers.

In all four options, projected expansion in administrative, research, and manufacturing activity can be easily accommodated in currently designated zones at points of regional and local access, i. e., the Highway 680/ Highway 24 interchange, the west Concord industrial area, the Concord BART Station environs, and in the northwestern vicinity of the Ygnacio Valley Road/Oak Grove Road intersection



OPTION 4.

TRANSIT-DEPENDENT SYSTEM - SINGLE CENTER

- MAJOR COMMERCIAL EXPANSION (RETAIL)
- NEW NEIGHBORHOOD SHOPPING CENTER
- LIMITED EXPANSION OF EXISTING NEIGHBORHOOD SHOPPING CENTER
- MAJOR SERVICE EXPANSION (PROFESSIONAL AND PERSONAL)
- MINOR SERVICE EXPANSION
- CLUSTERED LOW DENSITY RESIDENTIAL
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- LOCATION FOR NEW HIGH DENSITY RESIDENTIAL
- MAJOR ADMINISTRATION, RESEARCH AND MANUFACTURING EXPANSION
- PROPOSED TRANSIT ROUTE
- OPEN SPACE

EVALUATION. A balance sheet evaluating the above four options is presented in Table 1. Discussion of the rationale behind these evaluations follows the table. The evaluations of each option have been made based on three major factors: (1) performance, (2) feasibility, and (3) impact. Under performance, the basic question is what level of service will the specific transportation option provide? Feasibility consists of two aspects: (a) the question of whether there are sufficient funds to finance the required capital improvements and (b) the question of community acceptance. In this evaluation, community acceptance is based on the responses received from the Citizens Random Panel and the Citizens Advisory Committee. Impact evaluation is based on three questions: (a) how compatible is the particular transportation system option with existing and proposed land uses; (b) what are the effects on the natural environment, and (c) what are the fiscal effects, i. e., what are the outlays in public funds required, how is the burden for these outlays distributed, and what tax revenues are likely to be produced as a result of the option?

TABLE 1: OPTION EVALUATION BALANCE SHEET

Evaluation Factors	OPTION 1: AUTOMOBILE-DEPENDENT	OPTION 2: TRANSIT-DEPENDENT, MULTI-CENTERED	OPTION 3: TRANSIT-DEPENDENT, BINODAL	OPTION 4: TRANSIT-DEPENDENT, SINGLE CENTER
Level of Service	4	1	3	2
Community Acceptance	4	2	1	1
Funding Feasibility	4	3	1	2
Land Use Compatibility	P	G	G	G
Environmental Compatibility	P	G	G	G
Fiscal Affects	P	G	G	G

Scoring System:

A. Indication of affects generated (good, poor)
B. Numerical ranking (hierarchy) from high (1) to low (4)

Level of Service

The projected level of service provided in the future by auto-dependent OPTION 1 is considered unacceptable due to severe restrictions on roadway capacity and the inability at this point in time to promote a distribution of land use in balance with these roadway limitations. The main restrictions occur on Interstate 680 in the vicinity of Ygnacio Valley Road; along Ygnacio Valley Road itself, particularly in the commercially developed portion of Walnut Creek; and along the western ends of Treat Boulevard and Monument Boulevard. Traffic loads on all of these roadways are projected to exceed capacity by 1980 even if the major road widening improvements called for in the Concord General Plan were implemented. Further widenings would be required to meet the projected travel demand, but these are considered infeasible due to the high value of adjoining developed lands which would need to be acquired to provide a sufficient right-of-way. Jurisdictional differences also create uncertainities which must be recognized. Resolution of traffic congestion in the Concord area would also require major improvements by the Cities of Walnut Creek and Pleasant Hill plus

major expansion of Interstate 680 by the State of California. Thus, even if the City of Concord were to proceed with major roadway improvements based upon OPTION 1, there are no assurances that the balance of the system improvements needed will be constructed. Indeed, present evidence suggests that they would not.

Evaluation of the three transit-dependent options requires consideration of the service level provided by each for both transit riders and motorists. Each of these three options produces positive benefits for motorists making trips which cannot be readily diverted to transit since the provision of transit service releases roadway capacity, thereby making auto travel easier.

Comparisons among the three transit options indicate that OPTION 2 and 3 would provide a higher level of auto service for non-work related trips since a greater portion of the retail use and employment opportunities are decentralized and thus within closer driving distance. Moreover, the land use pattern shown in these options would tend to disperse traffic and potential congestion. In contrast, OPTION 4 would increase the average driving distance and allow traffic to converge in a single area, thereby compounding problems of traffic congestion. This negative effect would, however, be offset by the higher frequency of transit service and greater potential for diversion of trips to transit, which are possible in OPTION 4 due to the focusing of major portions of both work and non-work destinations into the Central Area.

Thus, in terms of level of transit service, OPTION 4 would promote more frequent service along the radial corridors feeding into the Central Area due to briefer headways between buses and less need for transfers. Conversely, OPTIONS 2 and 3 would provide greater transit access throughout the City, but would also have less potential for attracting travelers to transit since service cannot be as frequent and the need for transferring would be greater than in OPTION 4.

Land Use Compatibility

Key considerations included under land use compatibility are (1) the extent to which the proposed transportation system helps produce the land use pattern desired in the particular option shown, (2) the direct or indirect displacement of residences or businesses which might result from application of the proposed policies, and (3) the disruptive effect on uses fronting on or in the vicinity of the proposed transportation facilities.

In the evaluation balance sheet, OPTION 1 scores negatively on all three counts. The Based Case analysis of the General Plan indicates major transportation problems by 1980 if transit is not provided. In other words, the proposed auto network shown in OPTION 1 is not sufficient to meet the needs even of 1980 land uses, most of which reflect decisions already made and approvals granted. Any attempt to make this option work would result in major road widening programs displacing businesses and residences. Major points of congestion would still remain and diversion of traffic to local streets could be expected. Accessibility to places of business would be limited and thus business potential diminished. Increases in congestion, noise, odors, and safety problems could be anticipated throughout the City.

Comparing OPTION 1 with the transit-dependent options reveals that all transit options are about equal in regards to displacement of housing or businesses. In each choice the only major displacement required by new roadways or busways will take place along Meadow Lane. In OPTION 4, however, displacement of residents and some small businesses occupying properties between the BART station area and the Plaza would be necessary to accommodate the higher land uses and new development proposed.

OPTIONS 2 and 3 rate better than OPTION 4 in regards to neighborhood disruption. Due to the concentration of trip ends in the Central Area and the radial street pattern, OPTION 4 would concentrate more trips on Oak Grove Road, Meadow Lane, and to a lesser extent, Cowell Road and Concord Boulevard. These are all streets along which existing land use is predominantly residential. The main disturbance that would occur here as a result of OPTION 4 would be noise from the transit vehicles. Such noise intrusion could be reduced somewhat by careful selection of vehicles with lower operating noise levels.

Since the routes in the area are relatively level, there would be no need for higher powered and noisier engines that are operating in many other parts of the Bay Area. OPTION 2 and 3 would tend to channel traffic along Clayton Road, Ygnacio Valley Road and the Southern Pacific Railroad right-of-way. These are all alignments which already serve as major divisions between neighborhoods and, therefore, would not tend to disrupt existing neighborhood structure. Moreover, due to the background noise levels produced by existing heavy traffic volumes along Clayton Road and Ygnacio Valley Road, transit operations would result in little appreciable differences in noise level. In terms of compatibility between the transportation system and land use, each of the three transit served options would provide the level of service necessary for the related land use to function properly. In OPTION 4, however, there is far greater need for stronger and more consistent land use control since the transportation system improves accessibility to both ends - the Central Area and outlying areas. Thus greater pressures are likely to be produced for commercial development, especially in outlying areas. In OPTIONS 2 and 3, this tendency is recognized and accepted as an integral part of the option.

Environmental Compatibility

Besides the noise considerations mentioned in the previous paragraph, major aspects considered in evaluating the environmental compatibility of each option are the air quality effects and the consumption of natural resources. With the auto-dependent option, 1990 projected auto emissions would be less than the present, assuming the established 1976 federal air emission standards. These projections, however, do not account for increases in idling time likely to be produced by congested roadways. Moreover, these decreases would be offset by emissions generated by new residential, commercial, and industrial land uses. No appreciable differences in air emissions exist among the three transit-served options. Each is estimated to produce on the order of 700,000 fewer auto miles per day in the Concord area by 1990 than would OPTION 1. Each of the transit-dependent options would constitute an important step in improving the area's air quality. Another important difference between the auto-dependent and transit-dependent options are the energy savings provided in the later options. Fuel savings on the order of 50,000 gallons of gas per day are possible with the transit-served options.

The overall land use policy proposed in each option is also critical to the extent that it may induce growth which will lead to needless elimination of open space resources or channel growth to areas where more intensive urban use is inappropriate. OPTION 1 is the least desirable in this respect since its reliance on the auto demands more and more decentralization and low intensity use. Thus, OPTION 1 would maximize development pressure on valued open space resources south of Ygnacio Valley Road and extending south along Marsh Creek Road. OPTION 2 and 3 would produce similar pressures since the presence of major commercial facilities in southeast Concord would be a catalyst for further development in surrounding and further outlying areas. OPTION 4 offers the best prospect for relieving development pressure on open space lands since it helps promote a concentrated pattern of development and eliminate the growth-inducing effect of outlying commercial growth.

To the extent that each of the transit-dependent options specify greater provisions for higher density living and provide transportation accommodations to make such a life style possible in Concord, all would help effectuate the preservation of open space lands. It should be noted, however, that these open space savings effects may be more regional than local.

Funding Feasibility

No substantial differences exist in the funding feasibility of the three transit-dependent options. For the most part the routes remain the same with the major differences reflected in the land use pattern. Although there could be differences in the patronage of the three options, the revenue produced by fares would finance only about 20 percent of the estimated operating and maintenance costs. Any differences in patronage would therefore have only a minimal impact.

The real differences occur in comparing the auto-dependent choice with the transit-dependent choices. Analysis of these two choices reveals that the cost of the transit-based systems would be equivalent to the cost of making the General Plan specified roadway improvements. Projecting the comparitive local tax rates of auto and transit options for 1980, the transit options would result in an additional rate of 80 cents per $100 of assessed property value (this assumes the 35 cent rate proposed in the forthcoming tax rate election) while the auto option would result in a rate of 60 cents per $100 of assessed value to supplement gas tax revenues. In each case, however, these tax rates are estimated to decrease by about one-third by 1990 due to an expanding property tax base. Since the transit operations would be financed on a larger base area, there is a greater potential for decreases in the tax rate than in the auto-dependent option which depends soley on the Concord tax base.

The most significant differences in funding between transit and auto dependent options are not revealed in the above comparison. The auto-dependent cost figures presented are based on the cost of providing General Plan specified roadway improvements, but as pointed out before, projected traffic volumes for 1980 will exceed the capacity afforded by these improvements. Thus, major expenditures well beyond an estimated $40 million would actually be required under OPTION 1, since needed improvements would necessitate extensive right-of-way acquisition in already built-up areas such as Oak Grove Road, Treat Boulevard, Monument Boulevard and Concord Avenue. Each additional $1 million of road improvements which must be financed from the property tax will require an additional tax assessment of about 3 cents per $100 of assessed property value.

Fiscal Effects

Appraising the fiscal effects of each option involves review of both the expenditures which must be funded from various public sources and the potential differences in tax revenues which might be produced under the conditions specified in the four options. The earlier discussion of funding feasibility provided a brief account of the property tax implications of the auto-dependent options as compared to the transit-served options. Major conclusions presented there are (1) the cost of providing transit service, even if federal operating subsidizes are not forthcoming, would be equal to or less than the cost of road improvements needed for a solely auto-dependent transportation system, and with federal transit operating subsidizes, the transit-served options would have substantially lower negative fiscal impacts than OPTION 1, and (2) the transit choices would also provide a more equitable form of public financing if a County district is established. In this way Concord is not required to finance improvements generated by development in the City of Clayton and in turn, the Cities of Walnut Creek and Pleasant Hill will help finance transit-related roadway expansions produced by travel demands in Concord and Clayton.

A negative fiscal aspect of each option which cannot be readily quantified is the tax loss or gain produced by necessary land acquisition and effects on remaining land uses. Major roadway expansions required with OPTION 1 would remove high value property from the tax rolls. It is questionable if these tax losses would be offset by the increased accessibility afforded to remaining land uses by road improvements. It is more likely, that the heavy traffic volumes and increases in noise and odors would produce a reduction or stagnation of property values along major portions of the improved routes. Conversely, the transit-served options would minimize right-of-way acquisition and land use displacement, while at the same time improving accessibility. This development would be more likely to have a positive effect on adjoining uses.

On the positive side of the ledger would be potential revenue benefits from both increased property and sales taxes. Here again, these revenues cannot be quantified since the variables involved are so numerous. General conclusions, however, are that the auto-dependent scheme is less likely to produce substantial increases in sales taxes because of accessibility problems. For example, comments received during the citizen participation portion of this study indicated an increasing reluctance to shop in areas like Sun Valley Shopping Center where there are cross-town driving inconveniences and

auto congestion problems.

Comparing the three transit-dependent options is also difficult. The case can be made that OPTIONS 2 and 3 with decentralized shopping facilities are more likely to produce greater sales taxes due to their more convenient accessibility to the expanding market areas of Clayton, southeast Concord and north Walnut Creek. This advantage might, however, be offset in OPTION 4 if an agglomeration of goods, services, and amenities are provided in the Central Area sufficient to offset the auto accessibility of the outlying centers. Additionally, if greater transit use for non-work trips can be promoted, the accessibility differences which tend to influence shopping trips would become more equalized.

Finally, OPTION 4 might produce a higher increase in property values than either OPTION 2 or 3. The assumption here is first, that better utilization of Central Area land, particularly in the Plaza, BART station, and Park and Shop Areas, might be attained under OPTION 4. At the same time, the outlying areas, though not developed for retail use, would nevertheless remain as good sites for other land use purposes and would be likely to draw investment at levels closer to those produced under OPTIONS 2 and 3. Moreover, by maximizing both local and regional access in the Central Area, OPTION 4 might attract uses which would otherwise locate outside the community.

Whether the growth-inducing affects of these options will produce added public costs in municipal services such as schools, and police and fire protection is the last aspect to be considered. Briefly, analysis conducted in the Base Case analysis of the General Plan indicated that for other than road improvement costs, relative differences in the level of growth produced by any of the options is not likely to be significant or to have a major impact on the present balance of municipal costs and revenues.

Community Acceptance

Traditionally, very strong acceptance of a completely auto-dependent transportation system as described under OPTION 1 has been basically inherent in suburban communities like Concord. Indeed, the automobile has dictated the established land use pattern in Concord and is responsible for the community's very existence. However, as the citizen review process of this study neared its end, both the Random Panel and the Citizens Advisory Committee were in agreement on the central issue arising in this study - both groups were strongly in favor of a transit-supported transportation system for Concord as an essential alternative to prevent total auto-dependence.

Both citizens groups also unanimously agreed that local transit in Concord should consist of a fixed-route community bus system using full-sized conventional buses. In addition, the concept of demand response transit service to supplement the fixed route system was also acceptable to a majority of the membership in both groups.

On the other hand, group attitudes differed concerning what basic configuration the transit-served system should take. The Committee favored OPTION 4, feeling that the Central Area should be emphasized as a regional commercial center and the primary commercial center for Concord, while outlying development should be limited to a continuation of the current pattern of neighborhood-serving commercial complexes. Conversely, the Random Panel favored OPTIONS 2 and 3, stressing citizen desire for more community level commercial facilities in the outlying areas. The Panel felt that comparison goods (junior department store) should be offered in outlying areas as a convenient alternative to cross-town trips to Sun Valley Shopping Center or downtown. The Panel also felt, however, that the Central Area should still be a regional center and the primary commercial area for Concord.

Both citizen groups agreed that with a transit oriented circulation network, higher density housing would be acceptable in the Central Area and in clusters principally along Clayton Road, the proposed major transit corridor (OPTION 3).

TRANSPORTATION AND LAND USE PROPOSALS

The transportation and related land use recommendations presented herein are limited to combined auto/transit solutions, since all evidence gathered and analysis conducted in the option evaluation portion of this study has shown conclusively that the Concord area cannot be served solely by the private automobile without numerous adverse community impacts. The recommendations are presented in four categories including (1) basic transportation and land use policies which should underlie the design and development of improved transportation facilities and services; (2) specific transportation elements including citywide thoroughfare system improvements, transit route layouts, pedestrian and bicyclist accommodations, and alternative Central Area circulation systems; (3) alternative community land use patterns; and (4) priority and timing of transportation improvements. It is not intended that these recommendations serve as a detailed transportation plan. Instead, they should function as documentation of major transportation concepts which should be embodied in the Concord General Plan, and to identify viable alternative concepts that are worthy of further consideration.

MAJOR POLICIES

Often in the past, transportation facilities have been designed or improved with the single purpose of accommodating the private automobile, and later improvements have been made in response to increased travel demand evidenced from the level of congestion on the roadway. If a two lane facility becomes crowded, it is improved to four lanes; if the four lanes become congested, the road is expanded to six lanes, and so on. The problem with this single purpose, reactionary approach is that it disregards both the physical, social and economic effects on the areas through which the alignment passes and fails to consider the effects of the growth induced by the road improvements. Now in the mid 70's, it has become clear that the fiscal, social, economic, and environmental costs of such an approach are prohibitively high. Total reliance on and accommodation of the private automobile is no longer a sound policy.

The critical starting point in an effective transportation planning effort should instead involve clarifying the overall objectives which underlie the decisions to be made. The objectives listed below are those upon which the specific transportation and land use proposals of this report are based.

The overriding objective is to balance the satisfaction of travel needs with the achievement of a satisfying and healthful living and working environment. Although these two aims seem closely interrelated, they may sometimes conflict with each other. The important point is that there are different ways to satisfy these travel needs, and the broader community and environmental goals should

be kept in mind when choosing an option.

Satisfaction of Travel Needs

1. Provide local transit service to increase the mobility of the portion of the population with limited or no access to the automobile. This group includes those too young or too old to drive; those whose income is too limited to permit ownership of an auto; households with one car, but with several employed household members, or with a husband and wife who must share use of the auto for work, shopping, school and other trip purposes.

2. Locate land uses throughout the City in a pattern which facilitates transit service and reduces dependency on the private automobile for work, shopping, recreating and other trip purposes.

3. Recognize the functional interrelateness of Concord with other communities in central and eastern Contra Costa County and work with these communities to promote balanced auto/transit linkages between such functionally interrelated areas.

4. Consider both walking and biking as major means of linking residential areas with schools, parks, shopping areas and places of employment. Provide an expanded pedestrian and bicyclist circulation system with maximum feasible separation between pedestrian and bicyclist movements, and auto traffic. In particular, bike and pedestrian access to transit should be emphasized. Safe bicycle storage should be provided at popular bike trip ends (transit stops, etc.).

5. Where necessitated by right-of-way limitations, give transit vehicles priority over private autos. Depending upon the traffic volumes involved this may take the form of either exclusive bus lanes throughout the day or exclusive bus lanes during peak hours.

6. Reduce both direct and indirect transportation costs by providing alternatives to multiple automobile ownership. This effort can take the form of either expanding public transit accommodations or creating opportunities for living, working and shopping within the same locale.

7. Develop transit as the primary means of transportation to major concentrations of jobs.

8. Clarify the organization of the transportation network to facilitate more efficient and satisfying transit and auto use. Where justifiable from both a circulation and environmental protection standpoint, complete presently discontinuous sections.

9. Facilitate movement by private automobile for trips which, due to their nature (i.e. certain business trips) or to their origins and destinations, cannot be readily serviced by transit.

10. Reduce offstreet parking requirements for both residential and non-residential uses in areas served by public transit in order to encourage high transit use.

11. Promote high transit utilization by providing convenient, comfortable, and frequent service throughout the City.

Achievement of a Satisfying and Healthful Living and Working Environment

1. Protect existing and future residential neighborhoods from traffic movements which create safety, noise and pollution problems.

2. Organize transportation facilities to respect and reinforce the identity and functions of neighborhoods and special districts.

3. Use transportation facilities and services as a means to attract and shape land uses consistent with the objectives specified in the General Plan.

4. Expand public transit accommodations as a means to reduce energy consumption.

5. Reduce costs and disruption from road widen-

ing programs by providing local transit service and by granting transit vehicles priority over private autos along routes where traffic capacities are restricted.

6. Limit traffic volumes to levels which will not be detrimental to adjoining land uses along the route.

7. Where necessary, accept vehicular congestion as a means to discourage private auto use, to redirect traffic to routes and areas where it can be adequately accommodated, or to promote other, broader community objectives.

8. Design and locate transportation facilities to protect and enhance the open space and scenic values of the community.

9. Use the design and development of public transportation facilities as a positive means of improving the appearance and quality of the affected public area as well as related private areas.

This Southeasterly view from above Concord's Central Area (BART tracks and yard in foreground) shows those large natural open space areas which should be preserved. In the center of the photo, Inner Lime Ridge provides relief from the prevailing development pattern. In the background, the Newhall Ranch, quarry, and other large open space lands south of Ygnacio Valley Road can be seen.

LAND USE RECOMMENDATIONS

The transportation proposals detailed later in this chapter and the specific land use recommendations outlined below are intended to be mutually supportive. For the most part, these land use and transportation objectives represent an amalgamation of the aims expressed by the Random Citizens Panel and Citizen Advisory Committee during the course of the study (see Chapter 3 for an expanded discussion of the citizen responses). In some cases, and these have been noted, additional or other modifications are suggested by the consultants. Figure 1 provides a summary of these recommended land use objectives.

OPEN SPACE. The proposed open space areas are delineated on Figure 1 and are comprised of two major elements. The first of these consists of the retention of large, natural areas which are important for preserving visual barriers between the more urbanized areas, providing visual relief from the prevailing pattern of de-

Figure 1.

LAND USE ELEMENT

- OPEN SPACE
- PROTECTED NEIGHBORHOOD
- MULTIPLE HOUSING
- REGIONAL SHOPPING CENTER
- COMMUNITY SHOPPING CENTER
- NEIGHBORHOOD SHOPPING CENTER
- REGIONAL PROFESSIONAL AND BUSINESS SERVICES
- LOCAL PROFESSIONAL AND BUSINESS SERVICES
- MAJOR INDUSTRIAL SITE


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velopment, insuring access and use for recreation purposes, and avoiding construction on lands with severe slope instability problems. The major lands contained within this open space area are in the Inner Lime Ridge vicinity and include the Newhall Ranch lands south of Ygnacio Valley Road and the adjoining State of California lands. Concentrated development on the quarry portion of the Newhall Lands is considered acceptable by the consultants, if it serves as a means of ensuring permanent retention of remaining portions of the site by offsetting the cost of procurring those lands. Although less visible to the general community, the valley along Alberta Way is also considered as a major open space and scenic resource worthy of retaining in open use. Limited residential development along Alberta Way is considered acceptable, again only if necessary to offset open space land procurement costs and if detailed environmental surveys of the area favor such a use. If development is permitted in either of these two areas, buildings should be highly clustered and carefully sited in patterns which avoid hazardous areas and insure the preservation of the major natural resource and scenic values which give these areas their present open character.

The Newhall Ranch quarry on Ygnacio Valley Road

The second open space element proposal consists of the creation of linear parks generally along the area's creeks and special rights-of-way, such as the Contra Costa Canal and BART alignment. These linear open spaces should be developed in conjunction with the bicycle and pedestrian path system recommended later in this chapter. A series of small, low maintenance open spaces should be located along the linear park to provide for informal and spontaneous recreation activities at the immediate neighborhood level. These spaces might consist merely of a turfed field, which need not be larger than 5,000 to 8,000 square feet, suitable for throwing a football, softball or frisbee; or a paved surface for basketball or tricycle riding. The linear park, with its associated local play areas and the recommended large scale natural areas, would compliment the City's already highly developed system of community and neighborhood parks.

The valley along Alberta Way

A residential land use pattern and suburban profile are firmly established throughout much of the City.

RESIDENTIAL AREAS. The present residential land use pattern, and the social patterns it has created, are firmly established throughout much of the City. It should be the intent, as already recommended in the overall policies section, to protect and enhance this suburban profile and the residential character and quality of the community. A chief means of achieving this end is to ensure that heavy traffic movements are not permitted to intrude into and disrupt established neighborhoods. Figure 1 identifies these various community areas designated as protected neighborhoods, where this policy of protection and enhancement should prevail.

Although the predominant housing type throughout Concord is the single family detached home, there is an increasing need to make provisions for other housing types. The need has been brought about by rising housing costs, shifts in family size and composition, changes in social and cultural values, and growing concern for the protection of the natural environment. The consultants concur with the views expressed by the citizens groups that higher density, multiple housing should be provided in the Central Area, along Clayton Road where a high level of local transit service is proposed, and at other points of high local or regional access in the community, i. e., where there is a junction of two or more local fixed transit routes, or in the immediate vicinity of the BART stations.

The consultants do not believe, however, that there is a need in Concord for either high rise structures or densities in excess of 25 dwelling units per acre (approximately 50 to 60 persons per acre). High-rise structures are generally incompatible with the suburban profile that dominates this community. High rise residential structures and excessive densities connote a physical confinement which would be in conflict with the suburban amenities that home seekers look for in this area. The intent should instead be to produce housing which maintains a scale close to that of the existing areas, provides the majority of the residents with units having either close physical or visual proximity to the ground, and allows provisions for on-site open spaces and many of the indoor and outdoor amenities traditionally associated with single-family living.

Greater multi-use of land is also recommended for the Concord area. Specifically, provisions should be made to encourage or even require inclusion of medium and high density residential units (as defined in the General Plan) within commercial areas. Such a policy would be particularly appropriate in the Central Area and along Clayton Road, but might also be considered in combination with neighborhood-serving centers.

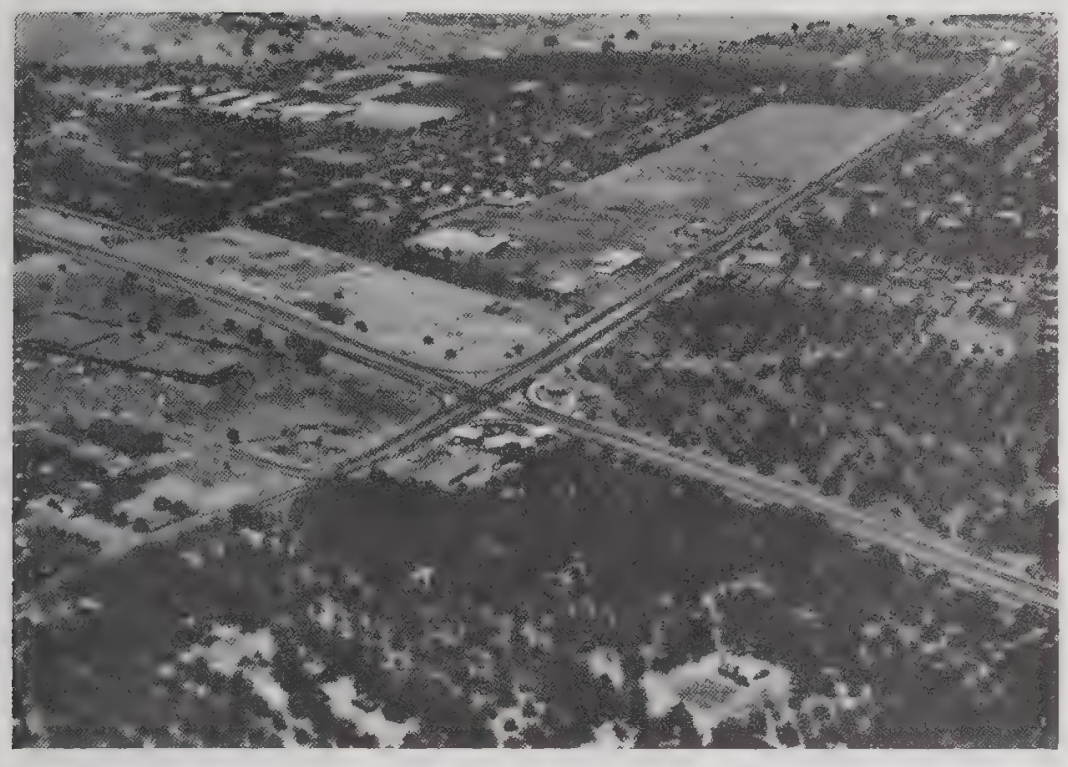
In portions of the community where scattered, undeveloped parcels remain in otherwise developed areas, new housing should generally be limited to densities equivalent to those prevailing in the areas. However, small upward adjustments in housing density ranging from 10 to 20 percent should be considered if the increases help produce more moderately priced housing or residential amenities (parks, open space, etc.) benefiting the immediate neighborhood.

Where scattered, undeveloped parcels remain in otherwise developed areas, new housing should generally be limited to densities equivalent to those prevailing in adjacent areas.

RETAIL SALES AND CONSUMER SERVICES. In contrast to areas of residential land use where the overall land use pattern is firmly established, there still remains in Concord considerable flexibility as to the allowed location and size of future retail centers. This is a fortunate condition which has been produced by a combination of the rapid growth rate of Concord and adjoining areas, and the tendency of population-related commercial development to lag behind residential development. Consequently, it is still possible to channel commercial land uses, which tend to be one of the major generators of travel trips, into areas where they can be served by a balanced transportation system.

Two major alternatives for organizing retail facilities in the Concord land use pattern can be consolidated from the four options identified in the previous chapter on option analysis. Briefly, these are (1) promoting expanded retail accommodations in the Central Area, but also providing for a major community-serving center in southeast Concord (integration of Options 2 and 3); and (2) concentrating the major retail growth, with the exception of that which is primarily neighborhood-serving, in the Central Area (Option 4). The first of these alternatives represents the views of the citizen participants.

This northwesterly view of Concord's Central Area includes downtown commercial areas about the Plaza, the Park and Shop Center and other commercial properties along Willow Pass Road, and in the background, the west Concord industrial area and Sun Valley Shopping Center.



The Ygnacio Valley Road/Clayton Road intersection is pictured above. In the immediate foreground are orchard lands along the south side of Kirker Pass Road which are recommended as an alternate site for an outlying community-serving shopping center (Site A). In the background along Clayton Road are the large, vacant Garaventa/Murchio parcels, another possible location for such a center (Site C). The photo below shows a third site alternative, the Newhall Ranch quarry (Site B).

The Random Panel, in particular, expressed strong interest in better retail accommodations in southeast Concord. The second alternative is offered by the consultants.

It is difficult to make a strong argument that either of these two choices is vastly superior to the other. For example, the dominant Central Area choice would produce an average trip length greater than the binodal choice, but in turn would provide greater opportunities for access by transit.

Consequently, the basis for selecting among these two choices lies outside the scope of this study. The crucial question is whether revitalization of the Central Area, particularly the areas about the Plaza and Park-and-Shop Areas, should be given top priority. If so, would such a revitalization necessitate restricting growth of major comparison shopping facilities in outlying areas since, in the short run, there is not sufficient market demand to justify initiating major expansions in both locations? If the decision is made to give preference to the Central Area, there then arises the question whether it is reasonable to attempt to hold land in outlying areas for longer-term commercial development or whether this land should be put to other uses. If the decision is made to permit growth of major community-serving retail facilities at outlying locations, i. e., a 250,000 to 400,000 square foot shopping center, development should be limited to one of three alternative sites. These sites as shown on Figure 1 consist of lands along the south side of Ygnacio Valley Road and Kirker Pass Road adjoining the Clayton Road intersection (Site A), the Newhall Ranch quarry site (Site B), and the Garaventa-Murchio lands along Clayton Road (Site C). There is the danger that a strong, viable center such as that desired by the citizens will not develop if comparison and specialty retail uses are allowed to proliferate at all three of these locations. It would be reasonable, however, to allow neighborhood-serving retail uses on all three sites, while allowing community-serving retail uses at one site only.

Briefly, Site A consists of 40 acres of vacant land plus the existing Clayton Valley Shopping Center and Site B

is comprised of 40 acres of land excavated and leveled by past quarrying operations. Site C has a total of 50 acres with 1,100 lineal feet of frontage along Clayton Valley Road, has a rear boundary contiquous with the undeveloped Newhall Park, and is adjoined by another vacant 19 acre site with a 1,500 foot frontage on Clayton Road.

As already noted, a decision regarding commercial use on these three sites depends upon the City's policy regarding revitalization for the Central Area. But, the decision is also closely related to near future policy decisions regarding the status of open space lands south of Ygnacio Valley Road. For instance, if a decision is made to concentrate development on the quarry portion of the Newhall Ranch lands in exchange for preservation of the remaining portions of valuable open space lands, should that development include a community serving shopping center? It would be unfortunate to prematurely exclude such a choice for the quarry site at this time by approving zoning allowing such a center elsewhere in southeast Concord.

Offsite factors to consider in judging the advantages and disadvantages of these three alternative sites for an outlying community shopping center are 1) proximity to large market areas presently inconvenienced or isolated from the Central Area by traffic congestion, 2) condition and convenience of existing and planned access routes, 3) counter-active effect on existing and projected traffic problems, 4) growth-inducing effect on surrounding vacant lands, and 5) potential for transit patronage.

During the course of the study, the Citizens Advisory Committee and the Random Panel reviewed and rejected the idea of providing very localized convenience retail outlets within residential neighborhoods. The consultants believe, however, that this idea has certain merits and should be tried on a trial basis. Such a retailing pattern would provide residents throughout the City with a test example upon which they could base future judgments. Such facilities should be located and designed as an integral part of the neighborhood and sited to ensure that they do not create pressures for adding adjacent further commercial uses.

PROFESSIONAL AND BUSINESS SERVICES. Included among professional and business services are such professionals as lawyers, engineers, architects, and doctors; and such businesses as banks, insurance offices, real estate offices, and countless others providing auxilary services to other business firms. These uses can be characterized as being either local-serving, that is meeting the needs of individuals or firms within the immediate area, or as region-serving meaning that their clientele are drawn from many parts of the region. In the first instance, the firms must be accessible to neighborhoods throughout the community, while in the latter case either good transportation links to various parts of the region or locations convenient to the residences of the required work force are essential. Personal service includes such establishments as barber shops and repair shops. These uses must often locate in conjunction with local retail accommodations such as in a neighborhood shopping center.

Since service jobs comprise approximately 55 percent of the total employment growth projected for 1990, and region-serving jobs represent 70 percent of those service jobs, land use policy and regulations governing region-serving service land use are of critical concern.

The following land use distribution is recommended. Region-serving services should be concentrated in the Central Area with the area immediately adjoining the BART station assigned first priority. This policy will require implementing the proposed redevelopment project for this area. In the balance of the Central Area, region-serving uses should be located in close proximity to the local transit routes serving the area. Local-serving service should be located in either of three areas: (1) within the Central Area, in particular about the Plaza area, (2) along Clayton Road which is proposed as a major transit corridor, and (3) in conjunction with neighborhood shopping centers.

Table 2 shows the distribution of jobs within the study area based on these land use recommendations. The figure presents both a distribution assuming the policy option of directing major commercial growth to the Central Area, exclusively; and the option of providing for a major

center in southeast Concord. The transportation system proposed by the consultants has been tested and adjusted to meet the travel demands generated by this latter land use distribution.

TABLE 2: PROJECTED 1990 JOB DISTRIBUTION

Option	Central Area	Southeast Corner	Neighborhood Centers
Single Center			
Central Area emphasized exclusively			
Retail	5000	3750	5200
Service	7420	2340	9030
Other*	9440	420	13380
Total	21,860	6510	27,610
Binodal			
Southeast center also emphasized			
Retail	6045	829	5200
Service	8916	474	8231
Other*	9437	209	13380
Total	25,773	1510	26,810

*Research-administrative-manufacturing

Source: SEDWAY/COOKE

Region-serving services should be concentrated in the Central Area with the area immediately adjoining the Concord BART Station assigned first priority. In the balance of the Central Area, region-serving uses should be located in close proximity to the proposed major local transit routes.

ADMINISTRATIVE, RESEARCH, AND MANUFACTURING FACILITIES. Activities included under this land use category can range from administrative, clerical, or research to actual fabrication and manufacturing operations. For example, a major portion of the projected Concord area employment growth is expected to be in the administrative/clerical area. Among the chief factors relevant to Concord which affect the site and locational decisions of

these businesses are the following: (1) the degree of dependency on rail and truck transportation; (2) site size and thus, land cost necessary to accommodate either storage or production-related equipment; (3) the degree of labor intensity and thus transportation accessibility to the related labor force; and (4) the operating characteristics of the industrial operations, i. e., noise, odor, and emissions. As various opportunity areas under this overall administrative, research, and manufacturing category are addressed in this report, more specific uses of those areas will be recommended.

The following roles are recommended for the three major industrial sites in Concord.

1. The industrial lands north of Highway 4 should be devoted primarily to uses requiring good transportation linkages for movement of goods and for firms with low employment-to-land ratios such as trucking firms and warehousing operations. This area is also suitable for manufacturing operations which create noise levels beyond those tolerable in residential or office locations.

2. Due to its high regional accessibility and close proximity to Central Area commercial facilities, the west Concord industrial area in the Buchanan Field vicinity should be reserved for labor intensive industrial uses, particularly those with concentrations of administrative, research, and clerical employees.

3. The third major industrial area, along Detroit Avenue and south of Monument Boulevard, is suitable for light industries which do not require heavy movements of goods and materials.

PROPOSED TRANSPORTATION ELEMENTS

Proposed transportation elements are presented in four component parts: (1) the transit system, (2) the pedestrian and bicyclist system, (3) the auto thoroughfare system, and (4) the more detailed Central Area circulation system which will combine all of these elements.

The major administrative-research-manufacturing area along Detroit Avenue and south of Monument Boulevard is most suitable for light industries which do not require heavy movements of goods and materials.

Concord's established radial circulation pattern produces serious auto traffic congestion as it converges on the Central Area. However, this same road configuration is highly conducive to good transit service since it includes a series of high-demand travel corridors along which it is feasible to provide frequent bus service.

Although addressed separately, each of these presented elements are intricately interrelated with the design and dependent upon the proper function of the others. These proposals consider both the preconditions established by the existing land use pattern and those opportunities for varying that pattern to bring land use and transportation into better balance. Both of these constraints and opportunities were identified in the previous section.

The composite transportation system presented herein has been designed and tested to consider the major land use choices identified in the option evaluation phase of this study. In particular, the proposed system includes the alternative of concentrating retail and service employment, along with accompanying higher density housing, in the Central Area verses the choice of creating a major new community-serving retail center in the southeast portion of the City.

The traffic implications of different open space alternatives have not been explored any further since the option excluding residential growth in the major open space lands to the south of Ygnacio Valley Road can be expected to merely shift this residential growth into the Clayton area, resulting in an overall travel pattern and traffic count similar to those encountered with the option which includes clustered residential growth.

The implications on future traffic loads of introducing a transit emphasis to Concord transportation and land use policy have been highly analyzed in this study. A supplementary Technical Report documents these traffic tests and provides the City with a process for evaluating the traffic implications of future transportation and land use decisions.

TRANSIT SYSTEM. The topographical features of the Concord area have produced a land use and circulation pattern which is difficult to facilitate with the private automobile as the only transportation mode, since the number of routes in both east-west and north-south direction is limited. This situation produces concentrations of auto traffic in Concord which are almost impossible to accommodate. Ironically, this very same circulation pattern is conducive to transit service since it creates a series of high demand travel corridors along which it feasible

Figure 2:

TRANSIT ELEMENT

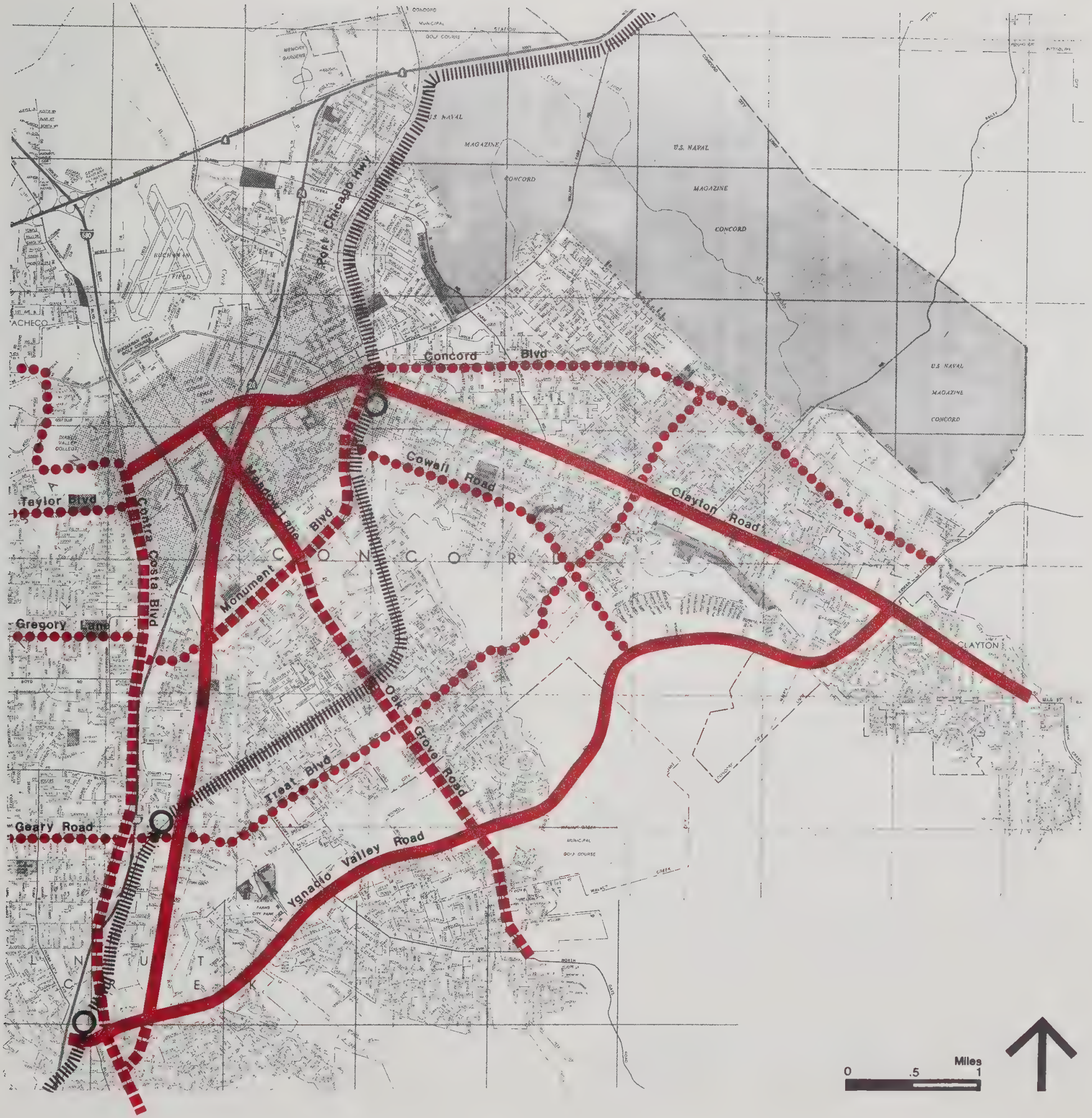
BART

MAJOR TRANSIT CORRIDOR- EXCLUSIVE BUS LANES ALL DAY

MAJOR TRANSIT CORRIDOR- EXCLUSIVE BUS LANES DURING PEAK HOURS

SECONDARY TRANSIT CORRIDOR- EXCLUSIVE BUS LANES DURING PEAK HOURS

CENTRAL AREA (SEE FIGURES 5 THROUGH 8)


Concord Blvd
Clayton Road
Cowell Road
Oak Grove Road
Ygnacio Valley Road
Treat Blvd
Geary Road
Gregory Lane
Taylor Blvd
Monument Blvd
Contra Costa Blvd
Port Chicago Hwy
U.S. NAVAL MAGAZINE CONCORD
CONCORD
CLAYTON
PACHECO
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to provide frequent transit service. Concord's situation contrasts with many suburban areas where a grid system of roadways has produced low density land use patterns which are difficult to service efficiently by transit. Ridership estimates made in the recent Contra Costa County Transit Implementation Study emphasize this point.[5] Of the eleven fixed routes recommended in that study, the four routes in the Concord area ranked one, two, three, and five in terms of estimated volume of riders per average weekday. Moreover, analysis conducted as a part of this study indicates that the fifth ranked route (Ygnacio Valley Road) would soon surpass the ridership levels of the other three routes. The proposed transit system is shown in Figure 2. It consists of four major elements: (1) the BART regional facilities, (2) major intra- and inter-city transit corridors, (3) secondary intra-city corridors, and (4) local demand response service commonly referred to as a "dial-a-bus" system. Specific recommendations for each of these elements are outlined in the paragraphs that follow. More detailed transit system layouts for the Central Area are presented later in this report (Figures 5, 6, 7, and 8). These detailed layouts will clarify the parallel diversion of traffic off Willow Pass Road near Park and Shop as shown in Figure 2.

BART Regional Service

Ultimately full BART service should be extended to Pittsburg-Antioch via an alignment along the vacated Sacramento Northern Railroad right-of-way. Interim bus service should be provided as presently planned by BART to both Pittsburg-Antioch and Martinez. If BART bus service is initiated between the Concord BART station and Pittsburg-Antioch prior to operation of county or local bus service, the BART bus should be routed via Kirker Pass Road and Clayton Road, thereby helping provide local transit access to BART and relieving traffic pressures on Clayton Road, Treat Boulevard and Ygnacio Valley Road. Once local or county transit service is also provided, this BART bus route should be shifted to Highway 4 and the Port Chicago Highway. Local routing of BART buses to Martinez will depend upon the Central Area transportation option selected for Concord (see further discussion of these options later in this report).

Major Transit Corridors

Major transit corridors are proposed for Concord arterials where there exists both a concentration of population and large concentrations of jobs, retail and service facilities, or other facilities generating heavy trip demands at either end of the route and along its length. Bus operating headways from five to ten minutes are recommended along these major transit corridors during peak travel periods. At other times, headways should be no less than 20 minutes apart.

Where autos must use the curbside bus lane to make right turns, midblock rather than corner bus loading should be provided. Figure 4, the Auto Thoroughfare Element, indicates which lanes on these thoroughfares are diverted to transit.

Four major transit corridors are proposed:

1. The Clayton Road Corridor stretching from the City's Central Area outward to Clayton. This route, in addition to serving the Central Area and Concord BART station, provides service to such commercial centers as the El Monte and Bel Air Shopping Centers and to proposed expansions of commercial facilities in the general vicinity of the existing Clayton Valley Center. It is proposed that the major transit corridor role of this route be further reinforced by the channeling of multiple housing along Clayton Road.

2. The Ygnacio Valley Corridor serves recent residential growth areas in both the Clayton and Ygnacio Valleys and links these areas with the Walnut Creek BART Station, downtown Walnut Creek, and to Interstate 680. With the exception of Interstate 680, the highest trip demands in the study area occur along this corridor. Other significant land uses along the route include the City's new performing arts pavilion, proposed commercial facilities on the

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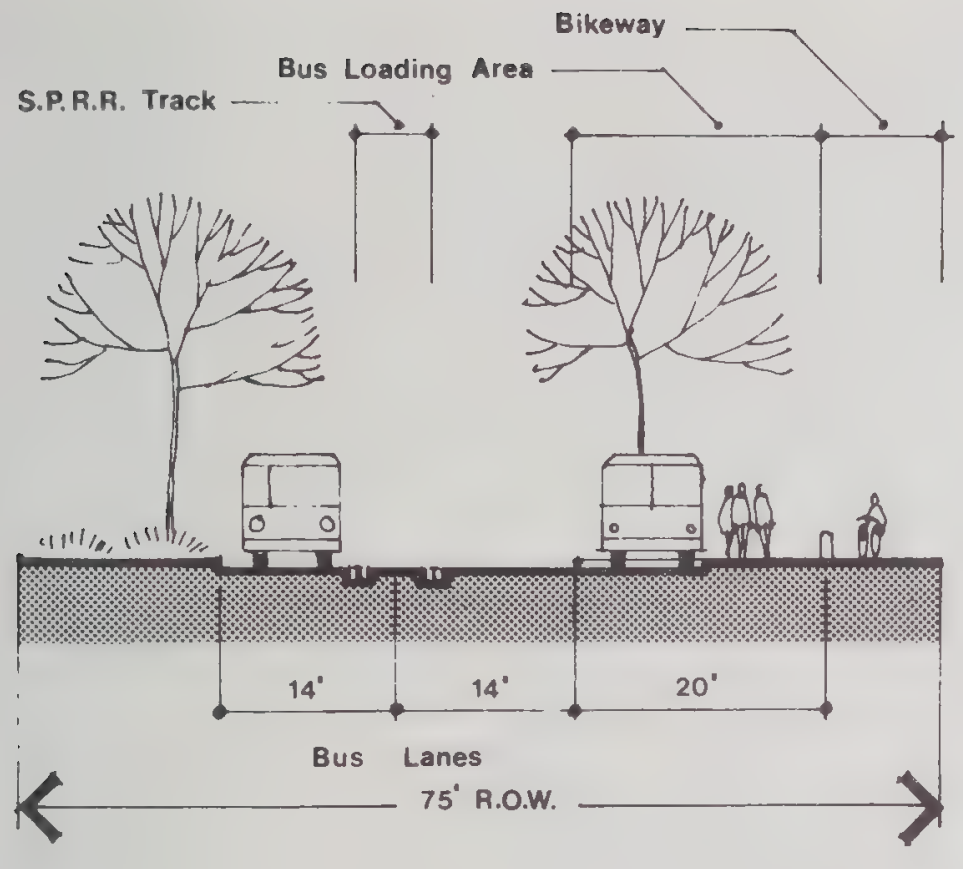
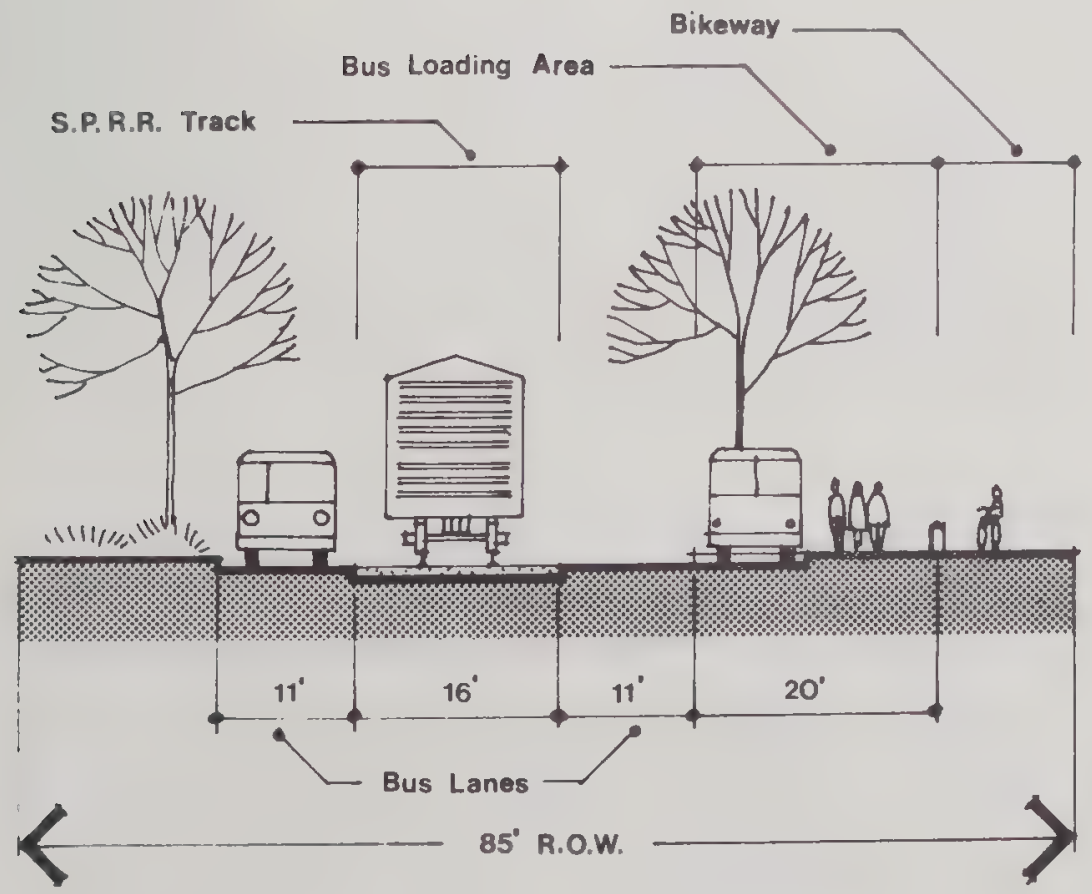
[5] Alan M. Voorhees & Associates, Inc.; Contra Costa Implementation Study, Second Interim Technical Report, February, 1974.



Cross section of the Southern Pacific Railroad right-of-way with joint bus-train lane.



Newhall Quarry site, the existing Encina Grande Center and neighboring industrial park, and the John Muir Hospital.

3. The Oak Grove Road/Meadow Lane Corridor serves the rapidly expanding Ygnacio Valley area and links this residential area with job concentrations in the west Concord industrial area and the Walnut Creek research and administration park at the north and south ends of the corridor, and with commercial nodes at Monument Boulevard and Treat Boulevard. The need for transit service is further necessitated by right-of-way limitations along Oak Grove Road which prevent widening of the roadway and therefore limit travel by private auto.

4. The Southern Pacific Railroad right-of-way provides an additional opportunity to serve as a high transit demand corridor. Transit service operating on an exclusive busway would provide a vital link between downtown Walnut Creek and Pleasant Hill BART stations, the Contra Costa Shopping Center, and future commercial development in Pleasant Hill's adjoining redevelopment area. A major function of this busway would be to relieve the highly congested Interstate 680 through provision of both a transit link between the points already noted as well as an inter-city link with communities in southern Contra Costa County.

It is proposed that the right-of-way be reconstructed, as shown in the adjoining diagram to permit buses to operate along the route jointly with trains. Since the train tracks are used only infrequently, no major conflicts are foreseen. However, a controlled procedure is recommended to eliminate any possibility of conflict and to guarantee transit service along this route at peak hours. An alternative arrangement would be to maintain a restricted 16 foot width for train operation with parallel bus lanes. This arrangement, however, would require acquisition of additional rights-of-way to accommodate bus turnouts and passenger boarding and de-boarding space.

Provisions should also be made for bicycles along this corridor. As shown in the diagram, a two-way bike path on one side of the right-of-way is suggested. Since there are few intersections with major roadways, this railroad right-

of-way is also ideal for this purpose. Moreover, the immediate relationship of this route to the BART stations would faciliate use of bicycles as a major means of BART access. As shown in the diagram, a two-way bike path could be provided on one side of the right-of-way. Although conflicts with pedestrians would occur at the bus boarding areas, these conflicts are relatively minimal compared to other alternative provisions for bicycle paths.

In addition to these four corridors, Monument Boulevard would also serve as part of this major network. Transit vehicles operating on either the Oak Grove Road/Meadow Lane or the Southern Pacific corridor could be routed along a Monument Boulevard exclusive, peak hour, curbside bus lane which would serve commercial areas and higher density housing along Monument, and link up with the central Concord BART Station and other Central Area destinations. Additionally, other transit vehicles from Pleasant Hill could be routed along Monument Boulevard.

Secondary Transit Corridors

Secondary transit corridors are defined as transit routes along which there are major concentrations of population, but few other uses, and which terminate at major travel destinations such as a large commercial center or regional transit facility. During the peak period, frequent transit service equivalent to the level provided along the Major Transit Corridors should be maintained on these secondary routes. However, during off-peak conditions, frequency of fixed-route service may be as infrequent as 30 to 40 minutes. Or service may be supplanted by the demand response (dial-a-ride) system.

Within the City of Concord, routes designated as Secondary Transit Corridors include Concord Boulevard, Cowell Road, Treat Boulevard and Port Chicago Highway.

Demand Response Service

Demand response service, commonly referred to as "dial-a-ride", is suggested to complement the fixed transit routes. Although this type of service has most often been recommended as a transit solution for low density areas incapable of being served by fixed-route transit, it has other features which make it highly appropriate for the Concord area. Some of these demand-response system features are (1) its applicability for providing a viable means of non-peak hour service to such destinations as schools, shops, and medical facilities, since the system offers door-to-door service (this feature helps especially to provide for the needs of the portion of the population without access to private autos for such trip purposes); (2) its smaller, quieter vehicles which can operate on local residential streets without disruption of the neighborhood environment; and (3) its smaller buses which can provide convenient feeder service to fixed routes during peak travel periods, with minimal transfer time. This latter feature, in turn, increases the patronage, and consequently the level of service, for the fixed transit routes.

Additional attention should be given to utilizing this transit equipment during off-peak hours and week ends for other transportation purposes in order to reduce the operating costs of the system. Other possible system functions might be provision of home delivery services, short-term rental of smaller vehicles to businesses and/or individuals, and charter services.

BICYCLE AND PEDESTRIAN SYSTEM. Until very recently, transportation plans have given little attention to bicycle and pedestrian accommodations. Even now, there is the tendency to consider bicycle facilities as mainly serving either the needs of school age children before they are old enough to drive a car, or to provide for general recreation and exercise. Although these two functions are important, the bicycle system should primarily be considered as a fundamental component in the citywide transportation system and should therefore be designed as a viable alternative to vehicular use for work and other trip purposes.

Both the topography and climate of Concord are favorable for extensive bicycle use. Moreover, Concord is fortunate in that it has a number of potential routes along which there are few intersecting streets and are therefore ideal for safe bicycling. Among these opportunities are creeks such as Pine, Galinda, Diablo and Walnut Creek, the Southern Pacific and Sacramento Northern Railroad rights-of-way, the Contra Costa Canal, and other linear open spaces such as Newhall Park and Lime Ridge. Almost all of these routes radiate outward from the Central Area, bisect the City's major neighborhoods, and pass through or near existing parks and schools.

Figure 3 depicts the major components of the proposed bicycle path systems. The delineated scheme incorporates the above opportunities and supplements these where necessary with proposed bike routes along side or in combination with existing roadways. Figure 3 represents bike and pedestrian routes that should be provided in the near future. In addition to these routes, local feeder routes should be designated within various neighborhoods and commercial districts.

An overriding aim in providing bicycle accommodations in Concord should be to separate bicycle paths as completely as possible from auto routes since numerous safety problems will occur at roadway intersections even where separate, but parallel bike lanes are provided. Moreover, provisions should be made along major bike routes to separate pedestrians and bicyclists, thereby avoiding the safety problems created by the mixing of these two uses. The minimum recommended right-of-way for a two-way bicycle path is $9\frac{1}{2}$ feet with at least a $6\frac{1}{2}$ foot paved surface. If pedestrians are to be accommodated along the same route, a parallel path three to four feet wide should be provided. Along the major routes shown in Figure 3 where such separated accommodations are not possible, the preference should be given to the bicyclist.

If necessary, adjoining right-of-way land should be acquired to enable development of adequate and safe bicycle and pedestrian facilities. These facilities must be recognized as a fundamental component in Concords transportation system. It is essential, then, that greater attention be given to the development of these facilities and that, for capital improvement financing purposes, they be given a status equal to automobile facilities.

Figure 3:

BIKE AND PEDESTRIAN ELEMENT

OFF-STREET ROUTES

ON-STREET ROUTES


BART
Halbrook Canal
Willow Pass Road
Concord Blvd
Galaxy Way
Walnut Creek
BART
Pine
Creek
Gellndo Creek
Contra Costa Canal
Cowell Road
Mt. Diablo Creek
Road
Dias Creek
Creek
BART
SPRR
Creek
Ygnacio Valley
Pine Hollow Road
Contra Costa Canal
Walnut
U.S. NAVAL
MAGAZINE
U.S. NAVAL
MAGAZINE
CONCORD
CLAYTON
C O N C O R D
L A F A Y E T T E
L A G U N A
C R E E K
Miles
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AUTOMOBILE THOROUGHFARE SYSTEM. The proposals under this heading focus on those major streets whose primary function it is to link the various residential and non-residential areas of the City and surrounding areas, and to distribute traffic to and from regional transportation facilities such as the freeways and BART. The intent is to help clarify the function of these major roads and their relationship to each other as well as to other citywide transportation components. The requirements of other streets, such as those either serving as primary access to abutting uses or collecting traffic within neighborhoods and distributing it to the major thoroughfares, is more properly dealt with as a part of more detailed individual neighborhood or district studies.

With the exception of the Central Area, a network providing for the thoroughfare function has already been firmly established by the area's topography and previous land use decisions. The major issues remaining to be resolved are those of road width and capacity and the extent of combined use of rights-of-way by autos, buses, pedestrians, and bicyclists.

The following Figure 4 shows the proposed Automobile Thoroughfares System developed in this study and designates recommended travel lanes for each roadway. The diagram does not necessarily preempt all road improvements specified in the General Plan. The only Plan road proposals that this report recommends for elimination for reasons which will be identified are the improvements of Bailey Road, Concord Boulevard beyond Kirker Pass Road, and Court Lane.

The only totally new roadways proposed herein for auto use are (1) an extension of Ayers Road, from Clayton Road to Ygnacio Valley Road; (2) provision of a Meadow Lane overpass at State Highway 24 (See Figures 5 through 8); (3) extension of Port Chicago Highway into the Central Area; and (4) a possible Galaxy Road connection between the west Concord industrial area and the Park and Shop area. Additional modifications are suggested for the interchange of Willow Pass Road and Interstate 680, and the interchange of Willow Pass Road and Highway 24. Other road improvements would be limited to completing and making uniform those road widening programs now underway (Treat Boulevard, Monument Boulevard, and Clayton Road). Specifically, it is recommended that Ygnacio Valley Road be expanded to a six lane facility. Most sections of this roadway as constructed were designed to accommodate this change.

The intent is to balance roadway improvements for automobiles with provisions for transit service. Thus, the recommended road capacities for the thoroughfare system are based primarily on off-peak hour automobile travel demands. Accommodation of peak travel period demands would involve dual service by auto and transit. This approach serves both to avoid excessive public cost, to protect residential and commercial area environments, and to facilitate more efficient and convenient transit service.

A fuller description of the roadways comprising the thoroughfare system follows. Included in these descriptions are requirements to accommodate the proposed introduction of transit vehicles and additional bicyclists.

Ayers Road

The only totally new right-of-way proposed as part of the thoroughfare system lies between Clayton Road and Ygnacio Valley Road where an extension of Ayers Road is proposed. The primary purpose of this new roadway is to link residential lands to the northeast of Clayton Road, where major increases in residential population are expected, with the Ygnacio Valley Road travel corridor. This link would also serve as the primary means of access to commercial facilities on Clayton Road, between St. James Parkway and Alberta Way, if such development is permitted.

The right-of-way for the Ayers Road extension should be secured as the adjoining vacant lands are developed. The present land use pattern and topography along the proposed alignment enable the new roadway to be incorporated into the area without disruption to existing neighborhoods. Moreover, the provision of this link will eliminate the need for the proposed extension of Bailey Road between Clayton Road and Ygnacio Valley Road. The Bailey Road extension proposal is considered undesirable because of the open space disruption that would result since that align-

ment bisects Newhall Park. And, the Ayers Road extension would have a greater tendency to minimize the use of Alberta Way as a crossover.

In combination with the Ayers Road extension, the existing road alignment between Concord Boulevard and Ygnacio Valley Road is proposed to be expanded to a four lane facility, with curbside parking prohibited. Allowances should also be made along this route for bus turnout bays. These roadway improvement requirements are based on a projected 1990 population of approximately 11,000 persons in the area bounded by Clayton Road, Bailey Road, the U.S. Naval Weapons Station southern boundary, and Kirker Pass Road.

Clayton Road

Clayton Road is proposed to function in two roles: (1) as a major auto thoroughfare, and (2) as the primary transit spine of the City. To accommodate these dual functions, future auto traffic should be restricted to the present four auto lanes, and the existing bicycle lanes should be phased out and converted to exclusive transit lanes.

Replacement accommodations for bicyclists should be provided on parallel routes east and west of Clayton Road (as shown in Figure 3) where there would be fewer conflicts with auto traffic. At major intersections, such as at Treat Boulevard, an additional lane should be provided to accommodate right turns by autos. Where this is not possible, buses would share the curbside lane with autos making right turns.

Concord Avenue

Concord Avenue between Interstate Highway 680 and State Highway 24 should continue to function as a four lane thoroughfare. The high vehicle per day traffic volumes as projected for this link in the General Plan base case phase of this study would be reduced to levels in line with the roadway's capacity by (1) the provision of local transit service, (2) the diversion of trips destined from the west Concord industrial area to Diamond Boulevard via Meadow Lane, and (3) an improved east-west connection across Highway 24 either by means of Clayton Road/Willow Pass Road improvements or a new Galaxy Way connection. These latter proposals are further discussed in a subsequent section on the Central Area transportation system.

Provisions should be made for bus turnouts on Concord Avenue since this roadway and highway crossover should serve as an integral part of the major transit network connecting Martinez, Pleasant Hill and central Concord.

Concord Boulevard

The General Plan base case analysis concluded that traffic loads will exceed Concord Boulevard's capacity by 1990, assuming a four lane facility, unless measures are taken to either divert traffic desiring to use this route or to reallocate a substantial portion of the trips to public transit. Due to the residential character of land use along the street and its role as a major traffic collector rather than a divider of the neighborhoods along the street, it is not considered desirable to expand roadway beyond four lanes. It is proposed, therefore, that the thoroughfare function of the street be limited by confining the roadway to a maximum of four travel lanes and by eliminating any direct connection of Concord Boulevard with Clayton Road in the City of Clayton, thereby avoiding the threat that it would become a bypass of Clayton Road.

Additionally, Concord Boulevard should be considered as a secondary transit route serving an estimated 1990 population of 37,000 residing in the area between Clayton Road and the U.S. Naval Weapons Station property.

Cowell Road

The corridor of land served by Cowell Road represents one of the faster growing areas of the City. It will be necessary, therefore, to expand the existing narrow two lane road to a modern four lane facility. Roadway expansion beyond four lanes should not be allowed in order to maintain a compatible relationship between Cowell Road traffic accommodations and adjoining residential uses.

Similar to Concord Boulevard, Cowell Road acts as the main traffic collector for adjoining residential areas and there is the potential threat that the road will become a

Figure 4:

AUTO THOROUGHFARE ELEMENT

MAJOR THOROUGHFARE

[2] RECOMMENDED TRAVEL LANES FOR AUTO USE

④ TWO LANES RECOMMENDED FOR EXCLUSIVE ALL DAY BUS USE, REMAINING LANES FOR AUTO USE

⑥ TWO LANES RECOMMENDED FOR EXCLUSIVE PEAK HOUR BUS USE, REMAINING LANES FOR AUTO USE

CENTRAL AREA (SEE FIGURES 5 THROUGH 8)


Pine Hollow Road
Ollivera Road
Solano Way
Port Chicago Hwy
Ollivera Road
Willow Pass Road
Concord Ave
Farm Bureau Rd
Concord Blvd
Taylor Blvd
Clayton Road
Ayres Rd
Kirker Pass Road
Cowell Road
Monument Blvd
Oak Grove Road
Treat Blvd
Ygnacio Valley Road
Gregory Lane
Bancroft Rd
Walnut Ave
U.S. NAVAL MAGAZINE
CONCORD
CLAYTON
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CREEK
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popular bypass of the Clayton Road spine if roadway capacity is provided beyond that needed to serve the residents along the route.

Since a full reconstruction of major portions of Cowell Road is required to convert the facility to four lanes, this route also offers an ideal opportunity to incorporate well designed bicycle accommodations into the right-of-way design.

Farm Bureau Road/Olivera Road

The primary function performed by Farm Bureau Road and East Olivera Road is to link residential areas in eastern Concord and the City of Clayton with Highway 24. Although the traffic volumes accommodated on this route are not numerically significant (less than 5000 trips per day are projected for this link in 1990), it serves as an important bypass of the Central Area.

An East Olivera Road thoroughfare road northwest of Willow Pass Road is proposed in place of the East 6th Street improvements recommended in the General Plan. East Street is a neighborhood street and should not be expanded. Furthermore, an East Olivera Road thoroughfare serves to eliminate turning movements onto Central Area streets which would otherwise impede the intersectional capacities of these more heavily traveled routes. The Farm Bureau Road/Olivera Road route should be limited to two travel lanes. Curbside parking might be eliminated at a later date if required to increase the roadway's capacity.

Monument Boulevard

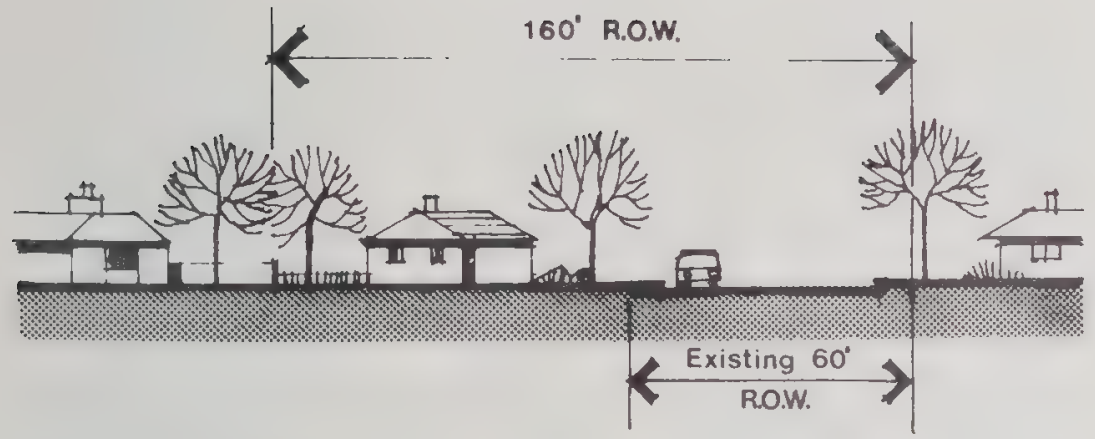
Monument Boulevard presently serves a number of functions including (1) a primary access route to Interstate 680, (2) a major approach to Concord's central area, (3) a crosstown route connecting Concord and Pleasant Hill, and (4) an access route to retail and commercial service establishments which line the street. Right-of-way conditions would allow expansion of the major Concord portions of Monument from the present four lane facility to six lanes. However, existing land development begins to constrict the Monument right-of-way along southwestern segments including the last portion in western Concord and sections in the adjoining City of Pleasant Hill. It will be necessary, therefore, to depend heavily on transit to relieve traffic congestion on these latter portions of Monument.

It is recommended that non-peak hour auto travel on this route be accommodated on six lanes northeast of Oak Grove Road and four lanes southwest. Further study should be given to accommodating transit vehicles on an exclusive road southwest of Oak Grove Road where right-of-way conditions permit. Detailed design studies are suggested along the length of Monument to promote integrated development of future public improvements and adjoining commercial facilities. For example, road improvements could be coordinated with reorganization of commercial parking accommodations, sign improvements, joint public/private landscaping, and even structure resiting to make more efficient use of lands along this Central Area route. Such a program could serve to arrest blight throughout this commercial district, while at the same time improving the performance of this portion of the City's transportation system.

Oak Grove Road/Meadow Lane

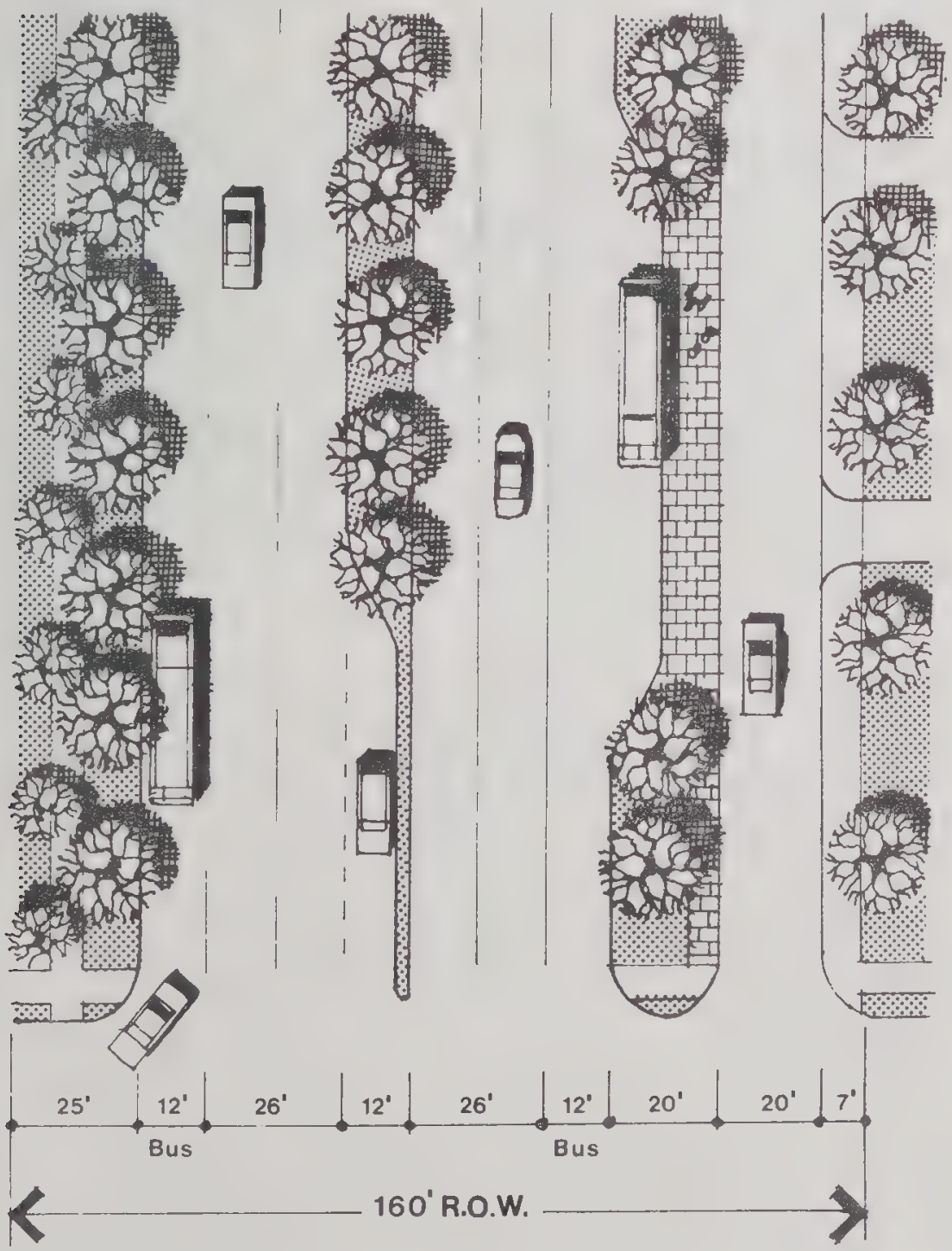
A major component in the thoroughfare system will consist of an improved Oak Grove Road and an expanded Meadow Lane with a Highway 24 overpass providing direct connection with Diamond Boulevard, on the west side of the Highway. In many ways the function proposed for Oak Grove Road and Meadow Lane is similar to that proposed for Clayton Road. Each serves as the major travel corridor for a highly populated valley and each serves as a primary means of access to the Central Area.

However, in the case of Oak Grove Road and Meadow Lane, the predominant adjoining land uses are residential, in contrast to the predominant commercial character of Clayton Road land use. Moreover, roadway expansion will be limited to four lanes along sections of Oak Grove Road due to adjoining land uses which impede further right-of-way widening. It will be necessary then, to depend very heavily on local transit service to relieve this corridor. Along the Meadow Lane portion of the route, four auto travel lanes plus two exclusive bus lanes are proposed. Therefore, it will be necessary to acquire



Cross section of Meadow Lane

Plan of typical segment of improved Meadow Lane with exclusive bus lanes at peak travel periods (See Figure 2).



additional rights-of-way along this portion.

It should be noted that the proposed Meadow Lane improvements will disrupt and divide an existing neighborhood. Care should be taken in the roadway design process to properly restructure this residential area. The adjoining sketch illustrates the recommended acquisition pattern and proposed street section. Residences to the east of Meadow Lane would be reoriented to newly developing residential areas and public facilities immediately to the east. Adjoining residential lands should also be buffered as much as possible from the affects of the through traffic. Similarly, residential areas to the west would be reorganized into cohesive neighborhood units with the right-of-way acquisition and roadway improvement serving as a means of buffering remaining residences and defining the outer edge of the residential area. The combination of a close-in location, high potential for transit service (transit routes are proposed on two sides of this area, i.e. along Meadow Lane and the S. P. Railroad right-of-way), and widespread substandard housing conditions suggests that this area might also be considered for higher density housing accommodations.

Pine Hollow Road

Pine Hollow Road should be upgraded from its present unimproved condition to a four lane facility. Its primary function will be to complement Clayton Road by serving as a second direct means of egress from the City of Clayton and other areas along Marsh Creek Road. Additionally, an improved Pine Hollow Road would serve a portion of those residences southeast of Ygnacio Valley Road which are within the City of Concord. Without this roadway, the intersectional capacity of Clayton Road and Ygnacio Valley Road would be severely overtaxed by projected traffic volumes.

Port Chicago Highway

The function of Port Chicago Highway is presently limited largely to serving the travel needs of residents in the northernmost residential areas of the City. Consequently, projected 1990 traffic volumes are not expected to increase much beyond the present vehicle trip per day rate along

this route.

Although it might appear desirable to encourage higher utilization of this route, such a course of action is not recommended since Highway 24 parallels Port Chicago Highway, has surplus capacity, and provides more direct connections with major Central Area destinations. Thus, use of Highway 24 is considered to be the superior alternative and would prevent introduction of non-related, disruptive traffic movements in these northern residential areas.

Solano Way

Prior to 1990, the thoroughfare function of Solano Way is expected to be quite limited. Its major role will be to serve as a bypass of Interstate 680 for trips destined between the City of Martinez and the eastern portion of the Central Area. However, once the industrial lands north of Highway 4 are more intensively developed, Solano Way could function as a major approach to this work center. Within the near future, a two lane roadway is considered adequate as shown in Figure 4. Right-of-way acquisitions should be made, however, to permit expansion to four lanes at a later date.

Treat Boulevard

Topographical conditions have led to a situation where the major portion of Concord's population is concentrated in two valleys with only two means of access possible between these areas: Treat Boulevard and Ygnacio Valley Road. Moreover, both of these roads are also the sole links to Interstate 680 for south bound work trips and are the main connections to the Pleasant Hill and Walnut Creek BART stations. In the vicinity of Oak Grove Road, close to 192,000 person-trips per day are projected for the combination of these two routes.

The ability to handle these traffic volumes is impeded by right-of-way land use restrictions along the portion of Treat Boulevard west of Oak Grove Road, particularly in the area near the BART station. These restrictions would make road widening both a costly and disruptive proposition. It is proposed, therefore, that two lanes of the present six lane portion of Treat Boulevard be devoted exclusively to bus use during peak travel periods. Since the two lanes which now accommodate bicyclists would be diverted to exclusive bus use, a parallel bike route should be developed along the Contra Costa Canal. This will serve to provide bus riders with a faster, more convenient trip and thereby divert a greater number of person-trips to transit.

The City's current plans to extend Treat Boulevard beyond Clayton Road to connect with Concord Boulevard should also be implemented. A four lane roadway, with curbside parking prohibited, is recommended for this portion of Treat Boulevard.

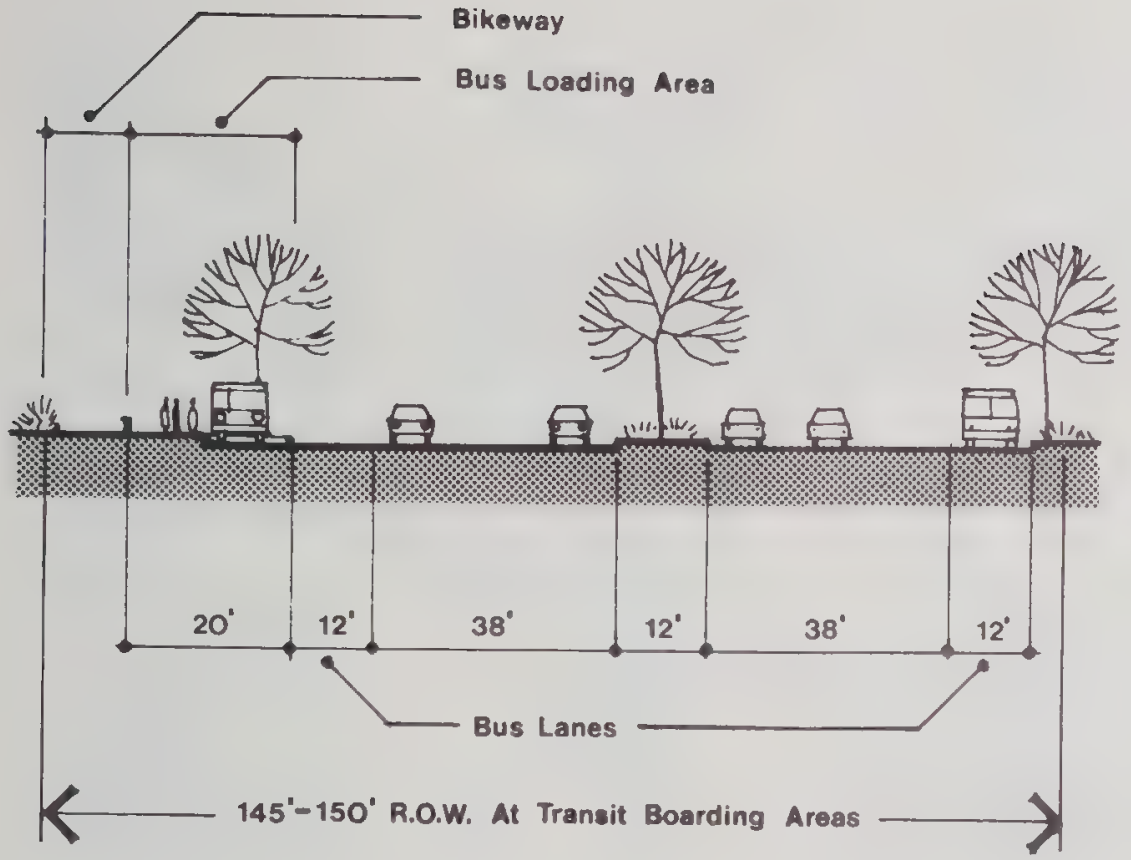
Willow Pass Road

The more heavily traveled portion of Willow Pass Road is discussed in a subsequent section on the Central Area transportation system. This discussion is limited to the segment of Willow Pass Road between Highway 4 and 2nd Street. The thoroughfare function of this section of Willow Pass Road is limited to providing access from the west to the Civic Center area and neighboring commercial establishments, and to serving the small pocket of residences along Willow Pass Road. Although some Concord traffic between the Pittsburg-Antioch area follows this route, such use is limited since Highway 24 provides faster service to most Central Area destinations.

The existing two travel lanes between Lynwood Drive and Highway 4 are considered adequate, but from Lynwood Drive to 2nd Street, the entire length should be improved to a consistent four lanes. Provision of a landscaped median should be considered between 2nd Street and Parkside and perhaps beyond to accommodate the heavier turning movements that occur in this commercially oriented section and to enhance the approach to the Civic Center area. This modification would require elimination of curbside parking.

Ygnacio Valley Road/Kirker Pass Road

The problems of accommodating travel demands in the



Cross section of Ygnacio Valley Road with exclusive all-day bus lanes and combined bicycle accommodations (See Figures 2 and 3).

general Ygnacio Valley Road corridor were discussed previously in reference to Treat Boulevard. It will be necessary for Ygnacio Valley Road to accommodate the major portion of this travel demand. Better than 76,000 person-trips per day are projected by 1990 for portions of Ygnacio Valley within Concord, with the travel demand approaching 110,000 person-trips along the Walnut Creek segment. Without transit, even an eight lane roadway would not be capable of accommodating such traffic. Therefore, an eight lane, divided roadway is recommended with two of those lanes used exclusively by buses (all-day) in order to both improve transit travel time and to discourage unnecessary use of private autos.

Additional provisions should also be made for bicycles along the north frontage of Ygnacio Valley and Kirker Pass Roads. Combined bicycle use here is considered appropriate since provision of a more convenient, separate and parallel route is not possible. Moreover, intersectional conflicts between autos and bicycles are minimized in this particular onroad accommodation because of the limited number of intersecting streets. The accompanying diagram illustrates a typical cross-section of the proposed roadway.

Finally, the General Plan proposal for extending Court Lane should be eliminated. If this alignment were implemented, it would disrupt Inner Lime Ridge and would encourage undesirable through-traffic through predominately residential neighborhoods.

CENTRAL AREA TRANSPORTATION SYSTEM. This separate discussion addresses all components of the Central Area transportation network since they are so much more closely intertwined than those in other, less concentrated parts of the City. Additionally, there exist a number of options which should be identified and investigated in greater detail as planning for the Central Area redevelopment project proceeds. Again, the term Central Area, as used in this report, applies to the area encompassing Sun Valley Shopping Center, the west Concord industrial area, and other industrial and commercial properties along Willow Pass Road and Concord Avenue, the Park and Shop

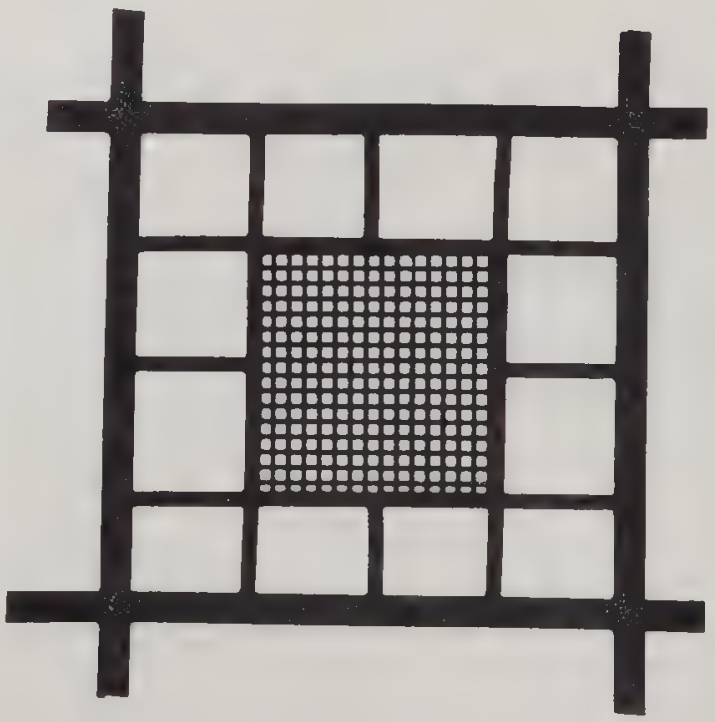
Center and adjoining lands to both the north and south, downtown commercial areas about the Plaza, and properties northwest of the Concord BART Station.

The basic structure of the Central Area transportation network was considered first. Two major options emerged from this analysis: (1) a system of loop roads circumscribing the main commercial areas with an additional access road penetrating the loop to service specific businesses; and (2) a grid system of roads which would receive incoming trips from major gateways. The accompanying diagram illustrates these two concepts.

LOOP SYSTEM

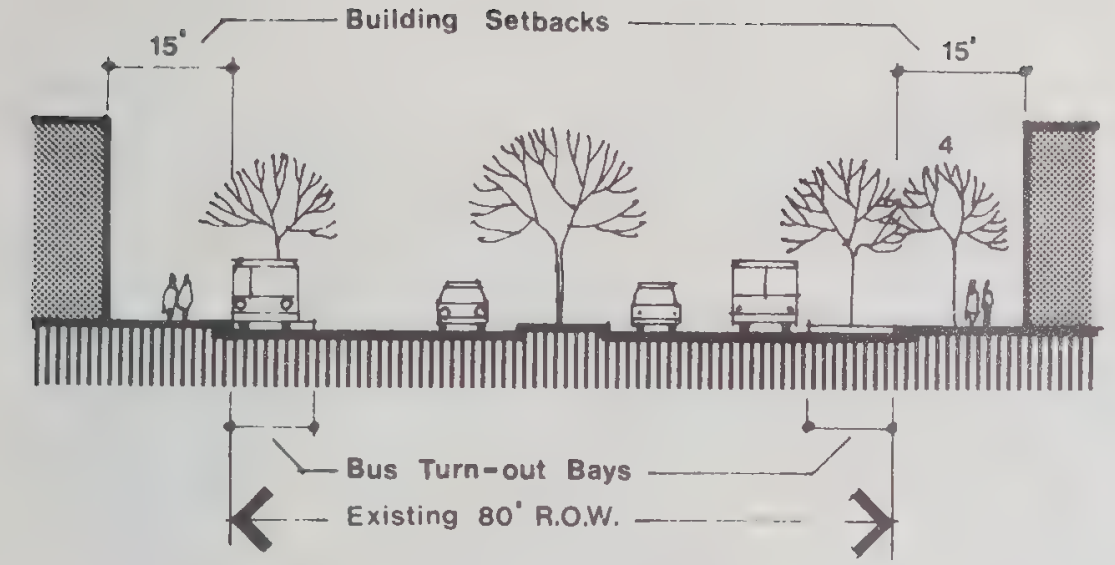
The loop concept has been rejected on the following grounds. First, a loop system tends to emphasize and favor the needs of trips bypassing the primary commercial area. This approach often produces a centrifugal effect; that is, development is induced along the perimeter rather than within the loop road. In an area where revitalization is the main objective, such a solution tends to be counterproductive. Second, loop roads create problems of orientation for motorists. Due to irregular intersections and subtle shifts in road alignment, the motorist often does not readily perceive changes in direction. Third, provision of loop roads often results in a pattern of irregular and often unusable parcels. This is especially true in older areas where the original land plat was based on a grid. The main argument advanced for the loop road is the ease of movement it provides through the elimination of 90 degree turns. But, the loop road in turn produces awkward intersectional movements to or from other routes joining the loop, a situation which contributes to the centrifugal effect already noted since it discourages trips into the commercial core.

GRID SYSTEM



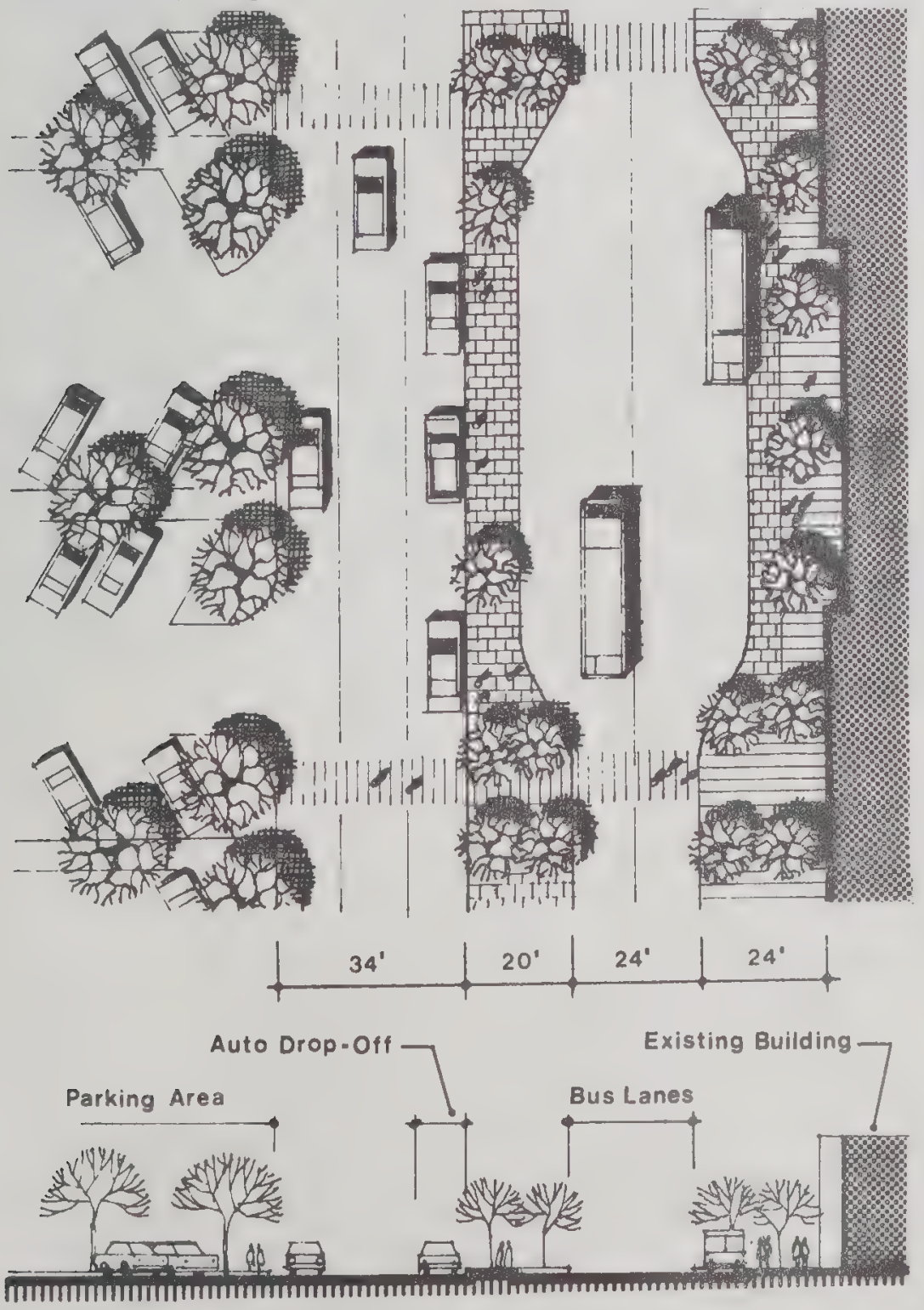
In contrast, the grid concept is less disruptive of existing land use and tends to direct trips closer and more directly to their destinations. Since speed is not a major objective within a concentrated commercial area (indeed it is disadvantageous since it does not allow the motorist adequate time to read directional information provided by public and commercial signs), 90 degree turning movements are not objectionable.

For these reasons the transportation network alternatives suggested in this report for the Central Area are all intended



Cross section of the proposed Willow Pass Road busway

Plan of a typical segment of the proposed Willow Pass Road busway through the Central Area (See Figure 5).



to implement a system which more closely approximates a grid solution. Two different grid systems are described below. One emphasizes use of two-way streets while the other is based on use of one-way streets.

Two-Way Distribution System

Figures 5 and 6 show two alternative two-way street networks. The first of these, shown in Figure 5, places a heavy reliance on public transit as a major means of reducing congestion along the Willow Pass Road corridor. From just west of Highway 242 east to East Street, Clayton Road is proposed as the major auto route replacing Willow Pass Road. This shift would require a new crossing of Highway 242 just south of Willow Pass Road and improvement of Clayton Road to a six lane roadway with a landscaped median incorporating turnslots. The existing Willow Pass Road right-of-way could then be redesigned, in conjunction with a reorganization of adjoining commercial properties to provide for transit service, expanded pedestrian accommodations and contination of auto access to nearby businesses. The adjoining diagrams depict two areas along Willow Pass Road. In the first area, between Diablo and Mira Vista Streets, two existing auto lanes would be converted to exclusive bus use. Along the north side of the street a 15 foot building setback would provide space for bus turnouts and an ample walkway area for pedestrians. On the south side, bus bays would be located to coincide with undeveloped or underdeveloped properties so that a 15 foot setback could be provided in the areas immediately adjoining the turnouts. The second diagram illustrates one of several methods of providing exclusive bus lanes in the Park and Shop Area. Parking along the Willow Pass Road frontage would be reorganized to accommodate two bus lanes adjacent to the existing shop frontages, with a twenty to twenty-five foot wide pedestrian way along the side of each bus lane.

Figure 5 also shows an alternative alignment for the Willow Pass Road/Clayton Road connection. This solution would maintain through traffic on the present Willow Pass Road underpass with a new road connection to Clayton Road introduced immediately east of the new Pacific Telephone Building.

In order to accommodate buses on a separate right-of-

Figure 5

OPTION A: TWO-WAY CENTRAL AREA CIRCULATION SYSTEM

- MAJOR THOROUGHFARE
- LOCAL AUTO ACCESS
- PEDESTRIAN WAY
- BUS ROUTE
- ALTERNATIVE ALIGNMENT OF CLAYTON ROAD
- ALTERNATIVE BUS ROUTE

Figure 6:

OPTION B: TWO-WAY CENTRAL AREA CIRCULATION SYSTEM

- MAJOR THOROUGHFARE
- LOCAL AUTO ACCESS
- PEDESTRIAN WAY
- BUS ROUTE

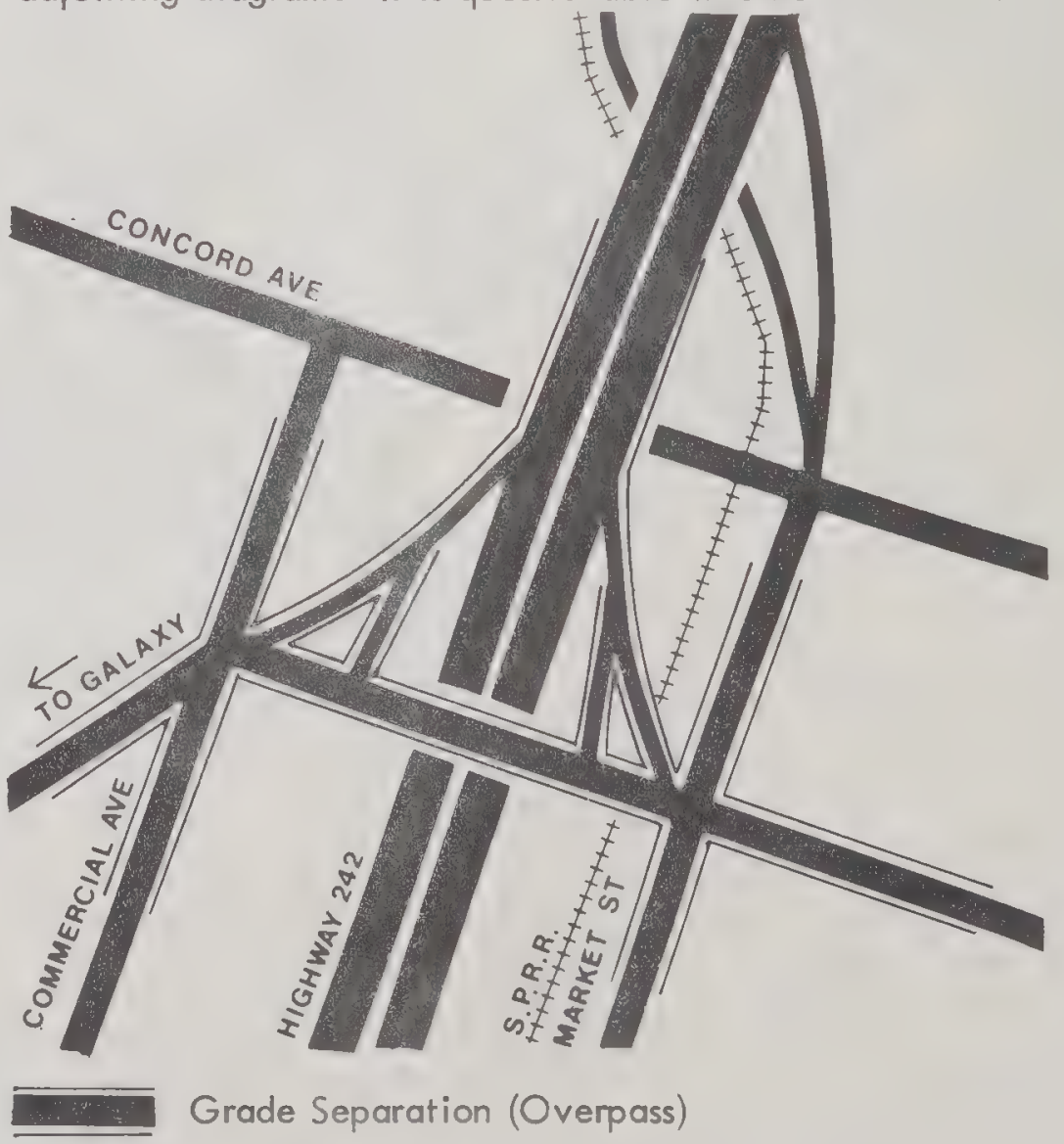
way, a new Highway 242 underpass would be needed between Willow Pass Road and Sutter Street. This route could be aligned to connect with Galaxy Way. In both schemes, an additional underpass for the busway would also be required at Interstate 680.

The Plaza area would be served by a major two way street network consisting of Galindo, Bonifacio, East Street and/or Port Chicago Highway and Clayton Road. Grant Street should be limited to bus, bicycle, and pedestrian use. The remaining roads within the two-way grid would function as access roads to parking and commercial establishments in this area. The status of the streets immediately north of the Park and Shop Center and those in the area immediately north of the BART Station should be determined as a part of a detailed development plan for these properties. Realignment of Concord Avenue with Bonifacio Street, and Clayton Road with Concord Boulevard is recommended in order to simplify these major intersections. The extension of Port Chicago Highway to Concord Boulevard is also suggested; however, this modification is not considered to be as critical to the operation of the Central Area network as the intersectional changes just proposed. Finally, an extension of Monument Boulevard to Clayton Road along an alignment using existing Mesa Street and Oakland Avenue is considered desirable. Although the projected travel demand on this proposed link is minor compared to most other routes in the thoroughfare network, the new alignment will relieve pressure on other intersections within the Central Area. The main functions of the Monument Boulevard extension will be to provide direct access to BART for residents living in the south and southeast areas of Concord and to permit auto trips between north and south Concord to bypass more heavily traveled portions of the Central Area.

Figure 6 depicts an additional two-way alternative. This proposal incorporates extensions of Galaxy Way west to connect with Contra Costa Avenue and east to meet Salvio Street. This alternative would require an underpass at both Interstate 680 and State 242. In conjunction with this improvement, a new southbound offramp from Highway 242 to Concord Avenue, west of the Highway 242, is also proposed.

The ramp would overpass the S.P. railroad tracks which cross under the freeway at this point. A direct connection from this off-ramp to Commerce Lane is proposed in this alternative along with an extension of Commerce Lane to connect with Enea Circle.

Division IV of the California Transportation Department is currently studying methods of connecting Galaxy Way with State 242. Tentative plans suggest a Galaxy overpass at the Southern Pacific Railroad tracks and Highway 242, with a northbound on-ramp and a southbound off-ramp connection between the Highway and Galaxy way. In order to achieve sufficient elevation at the railroad track with this scheme, it would be necessary to also elevate a portion of Market Street, Sutter Street, and Commerce Lane. The scheme would also eliminate present on and off-ramps from Highway 242 to Concord Avenue. The configuration of the Galaxy Lane overpass and interchange as proposed by the State is shown in the adjoining diagram. It is questionable whether or not the



Plan of the State's tentative overpass scheme connecting Galaxy Way with Highway 242.

level of rail use on these particular Southern Pacific tracks would justify the expense and land use disruption created by this extensive Galaxy Lane overpass proposal.

The Galaxy Lane extension as shown in these tentative State plans would link up with Salvio via Sutter Street. This arrangement would route major traffic movements along the north side of the Plaza, producing unfavorable traffic conditions at this downtown focal point by separating the pedestrian-oriented park from fronting commercial uses. This potential traffic conflict could be partially offset by providing a grade-separated pedestrian crossing to the Plaza. It would be more desirable, however, to minimize traffic movements about the four sides of the Plaza to promote a better pedestrian relationship between the park and fronting uses.

In summary, the Option A, Figure 5 scheme (no Galaxy Lane extension/680 underpass) would be less costly; would facilitate greater transit utilization by maintaining auto capacity between Contra Costa Boulevard and Market Street at present levels, thereby providing bus riders with a travel time advantage over motorists at peak conditions; and would permit better integration of the Plaza with adjoining commercial uses. On the other hand, Option B employing the Galaxy Lane extension and underpass (Figure 6) enhances automobile accessibility as well as transit service and should be considered if current redevelopment efforts induce Central Area development well in excess of the land use growth projections used in this study's concentrated Central Area option.

One-Way Distribution System

Suggested one-way street alternatives to the two-way distribution system described above are shown in Figures 7 and 8. West of Market Street, the two-way and one-way options are the same and offer the same choice of providing or not providing the Galaxy Lane extension. The main differences between the two and one-way options occur in the Plaza and BART station areas. North-south movements would be accommodated on two one-way couplets consisting of Galindo Street and Mt. Diablo Street, and an extension of Port Chicago Highway and East Street. This couplet would preempt the General Plan proposal for a Galindo/Mira Vista couplet since the latter would involve difficult right-of-way acquisition due to existing land use patterns and would result in an awkward intersectional situation. Bonifacio and Pacheco Streets, along with Concord Boulevard and Clayton Road, would provide for east-west movements. Clayton Road west of Sutter Street would remain a two-way facility.

Figure 8 shows the resulting circulation pattern of the one-way option assuming provision of the Galaxy Lane extension. It is proposed here that Salvio Street serve as a major road east to Mt. Diablo. Within the remainder of the Plaza area, Salvio would function as a local access road for fronting businesses.

Traffic movements between Monument Boulevard and Clayton Road could either be accommodated on a one-way couplet as shown in Figure 7 or by a two-way street as shown in the earlier two-way alternative (Figure 5).

At first glance, it would appear that the one-way alternative is superior to the two-way choice especially in its ability to accommodate higher traffic volumes. For example, Galindo and Mt. Diablo Streets can provide up to 8 travel lanes as compared to the maximum of four lanes on Galindo in the two-way option. A closer examination of traffic movements indicates, however, that the differences between the choices are not as great as expected due to several factors. First, the one-way pattern increases trip length and thus traffic volumes due to more circuitous access. Second, the one-way pattern produces the need to route through traffic along streets which might otherwise be devoted primarily to the access needs of adjoining businesses or major parking facilities. By mixing these two functions (through and access), the efficiency and capacity of the street is substantially reduced. For example, in the Plaza area it would be possible to use Mt. Diablo, Pacheco, and East or Colfax Streets as the main means of ingress and egress for public parking facilities. This arrangement would function well with the two-way option but would include inherent major traffic conflicts if the one-way option were used. An additional problem encountered with one-way streets is their disorienting, frustrating, and hence alienating

Figure 7:

OPTION C: ONE-WAY CENTRAL AREA CIRCULATION SYSTEM

- MAJOR THOROUGHFARE
- LOCAL AUTO ACCESS
- PEDESTRIAN WAY
- BUS ROUTE
- ALTERNATIVE ALIGNMENT OF CLAYTON ROAD
- ALTERNATIVE BUS ROUTE

effect on motorists. A major point in favor of the one-way option is the superior conditions which result at street intersections. An exception occurs, however, at the intersection or convergence of the Monument Boulevard and Port Chicago Highway extensions at Clayton Road which is necessarily awkward due to present land use constraints and particularly, to the existing Terminal Shopping Center.

Figure 8:
OPTION D: ONE-WAY CENTRAL AREA CIRCULATION SYSTEM

— MAJOR THOROUGHFARE
— LOCAL AUTO ACCESS
PEDESTRIAN WAY
BUS ROUTE

The final selection between the two-way and one-way grid alternatives should be made in conjunction with more detailed land use planning for the Central Area, perhaps undertaken as part of the current redevelopment program. It should be the function of the more detailed plan to specify exact locations and the points of ingress and egress of major public and private parking facilities, to determine where vehicular access shall be permitted for adjoining business properties, and to establish allowable land use intensities on a block-by-block basis.

PRIORITY OF IMPROVEMENTS

As an initial basis for assigning priorities to proposed transportation improvements, the following overall policy is proposed. First priority should be given to capital improvements accommodating transit operations. These would include roadway improvements which jointly serve transit vehicles and private autos. Second priority should be given to bikeways, and third priority to roadway improvements benefitting soley private auto use. The rationale for these priorities is the need to compensate for the current imbalance in Concord transportation facilities, i.e. the almost exclusive allocation of funds to facilitate private auto use, and the need to immediately begin to promote land use patterns which need not depend exclusively on the private auto. Moreover, it is essential that steps be taken now to ensure a high level of transit service by 1980 to meet the high travel demands expected.

Specific projects considered to have high priority are listed below. No attempt has been made to rank the individual priority of these projects, since the outcome of the November transit tax election will be a major determining factor. Moreover, before subpriorities can be identified, the status of Central Area redevelopment efforts should be established as to the role of the Central Area and its relationship to other existing or potential commercial areas.

INITIATION OF TRANSIT SERVICE. The City of Concord should make an immediate commitment to local and intra-

county transit. Full support should be given to the November transit tax election initiated by the Contra Costa Local Transportation Implementation Program. In the event that a transit tax is not approved by the voters, a second effort to secure approval, based upon a reduced district, should be undertaken. Concord should seek cooperation in this effort from Walnut Creek, Clayton and Pleasant Hill. If the effort fails, Concord should initiate bus transit service on its own in the Central Area. This service should be coordinated with, or even operated as a part of the interim BART bus service from Pittsburg and Antioch. As proposed in the County local transportation study, service should be routed to the Concord BART Station via Kirker Pass Road and Clayton Road. This would permit near future implementation of transit service along two of the major corridors proposed in this study. Steps should also be taken to initiate service along Ygnacio Valley Road in cooperation with the City of Walnut Creek.

TRANSIT RELATED CAPITAL IMPROVEMENTS. The following constitute the major transit related capital improvement recommendations considered to have highest priority. No relative ranking is intended.

1. A busway connecting the Concord BART Station area with the Sun Valley Shopping Center and intervening areas of the Central Area. Development of an exclusive busway in the Central Area should be given a high priority since such a facility would be necessary to both resolve congestion problems along Willow Pass Road and to serve as a major tool for Central Area revitalization.

2. Clayton Road improvements from Diamond Boulevard to Grant Street or related improvements to Willow Pass Road, depending on what Central District circulation option is chosen. Although these improvements would be primarily devoted to auto use, construction is necessary to enable implementation of the aforementioned Central Area busway.

3. Construction of the Port Chicago Highway extension from Salvio Street to Concord Boulevard and the reconstruction of the Concord Avenue connection with Bonifacio Street (or Bonifacio and Pacheco Streets if a oneway grid street design is selected). Similar to the proposed Clayton Road modifications, these improvements would directly benefit motorists only, but would indirectly make possible bus and pedestrian movements elsewhere in the Central Area. Consequently, the two proposals should be considered as high priority movements.

4. Road widenings on Monument and Treat Boulevard. Since exclusive, curbside lanes for buses during peak travel periods are recommended for these routes, road widenings necessary to ensure a consistent six lane roadway should be given a high priority.

5. Meadow Lane Improvements and Overpass at State 242. Actual construction of these facilities can be deferred until completion of other high priority projects. However, right-of-way acquisition should be initiated in the near future to prevent other new construction in the required right-of-way and to reduce the impacts of related housing relocation by spreading these over a longer period of time.

6. Clayton Road improvements from El Monte Shopping Center to the Central Area. This section of Clayton Road will need widening from its present width to accommodate additional auto use and the proposed exclusive, all-day, bus lanes.

7. Bikeway Construction. As earlier recommendations on overall priority of transportation improvements suggest, a major commitment should be made to construction of bikeways. Of the proposed network of bike routes, highest priority should be given to the Galindo Creek and Concord Boulevard bikeways since they will free for transit use the curbside lanes along Clayton Road presently designated for bike use. Those portions of the proposed bikeway feeding into the Concord and Pleasant Hill BART Stations should also be assigned a high priority. Efforts should be made to coordinate these improvements with the City of Pleasant Hill. A staged improvement program extending progressively outward from the stations is suggested.

NEXT STEPS

The primary function of this study has been to identify necessary changes in the City's current transportation policies and programs, and also to suggest alterations in the City's current land use policies since these two planning aspects, transportation and land use, are so intertwined. Proposed next steps to be taken to implement these required changes are outlined below under three categories: (1) General Plan revisions, (2) changes or additions to regulatory provisions, and (3) financing of suggested improvements.

GENERAL PLAN REVISIONS

For the most part the land use recommendations made in this report are consistent with the policies of the present General Plan. Only minor land use modifications and clarifications are recommended. On the other hand, major revisions and additions to the transportation portion of the Plan are suggested. In addition, clarification in the open space provisions of the Plan are proposed. These proposed changes in the General Plan are enumerated below.

LAND USE. The following land use policy modifications are recommended:

1. The Residential Development Map should be refined to more closely reflect a policy of locating medium density housing along the Clayton Road transit corridor. Additionally, a maximum allowable density should be specified for higher density areas in the Central Area. At present, no upper limit is specified resulting in allowable densities far in excess of those recommended by either the citizens or the consultants participating in this study. Furthermore, the present high density designation should be eliminated for the housing area immediately to the southeast of the Concord BART Station. The intent should instead be to conserve this existing moderate income housing supply. Finally, the concept of multi-use should be in the Plan, with multi-use areas specified on the Residential Development Map.

2. Immediate attention should be given to resolving the policy issue concerning Central Area development verses outlying shopping center development. After resolution of this issue, the Economic Activity Section of the Plan should be adjusted to reflect this decision.

3. The specific role of Concord's three main administrative-research-manufacturing areas should be more closely specified. The General Plan should specially protect against underutilization of such designated lands within the Central Area boundaries.

OPEN SPACE. Some lands designated as open space reserve in the current Plan should be protected against any future

development through redesignation as permanent open space. Furthermore, conditions for permitting development within designated open space reserve areas should be more closely defined. The following modifications are suggested:

1. The entire Inner Lime Ridge area should be designated as permanent open space including those lands now classified as reserve areas (the current reserve designation implies that the land will be suitable at some time in the future for development).

2. More explicit conditions should be established for the open space reserve lands shown south of Ygnacio Valley Road. The overall objective should be permanent retention of this unique area's major open space qualities. All Newhall lands below 600 feet in elevation are now designated as reserve areas. If development must be permitted here, it should be restricted to those portions of the land which are (a) free from natural hazard, (b) without significant wildlife habitat value, and (c) visually unobtrusive from major view corridors and viewpoints. Moreover, clustered development should be required to minimize both disruption of the land and to reduce the overall visual intrusion on the natural setting. Siting should also be regulated to facilitate efficient and economical provision of public services.

TRANSPORTATION. The major change required in the Circulation Plan element of the General Plan is the inclusion of recommended local transit policies and proposals. Other modifications in the road network and specified road sizes are also needed to reflect both the recent deletion of the cross-town freeway, and the intent to accommodate increased travel demands with a public transit system. The following changes are recommended:

1. Delete the proposed southeast extension of Concord Boulevard and its connection with Clayton Road. Any road connection between these two points should be indirect and designed to function as a local street only.

2. Delete the proposed southern extension of Bailey Road from Clayton Road to Ygnacio Valley Road. This link should be replaced by an extension of Ayers Road from Clayton Road to Ygnacio Valley Road.

3. Delete the Court Lane extension from Farm Bureau Road south to Minert Road.

4. Modify the lane width specified in the Circulation Plan element to conform to those proposed in this report.

5. Include in the Circulation Plan provisions for protecting established or planned neighborhoods from disruption by through traffic.

6. Reinforce the current Plan policy position regarding reduction in parking as a means of reinforcing transit use.

7. Adjust the Trails Plan to reflect the policy of removing bike lanes from roadsides where possible and providing separate rights-of-way with minimum intersections with other roadways.

REGULATORY RESPONSES

Since the functioning of the City's circulation system is intricately tied to land use conditions, it is essential that land use regulations be designed to promote the desired transportation system. Unfortunately, conventional zoning in Concord, with its emphasis on homogeneous land uses, has tended to produce a land use pattern necessitating almost total dependency on the private auto. This dependency has been further reinforced by the desire for low density living. Ironically, this latter desire has lead to a community pattern which both makes travel by auto increasingly difficult and service by public transit more costly. Within the Concord area, there exist opportunities to promote a land use pattern which would help facilitate travel by both transit and auto. To achieve this end, it is important that the proposals which have emerged from this study be implemented. One implementation device will be the use of new regulatory approaches. Several approaches considered applicable to the Concord area are described below.

MULTI-USE ZONING. This study has proposed that more

intensive commercial and residential development be channeled into the Central Area to promote better transit service and to strengthen the tie between transit and land use. Present development controls encourage single purpose use of a typical site, i.e., an apartment house, office complex or shopping center, and hence run counter to the recommended transit/land use objective. To alleviate this problem, two approaches to multi-uses are suggested. The first would establish an allowable floor area by type of use based upon the site size. For example, where a mix of retail, residential and office uses is desired, an allowable floor area ratio (the ratio of allowable floor area to site area) of 0.8, 1.0, and 1.5 might be established respectively for retail, residential and office uses. Thus, in order to achieve maximum economic use of the site, the developer would tend to incorporate all of these uses into his scheme. In some cases however, the developer may still prefer to construct a single level shop or office and not take advantage of the maximum allocation of floor area. To avoid such underutilization, the use which is least likely to be provided could be designated as the dominant use, with the other uses permitted on a conditional basis. For instance, if the Plan objective is to provide housing within a portion of the Central Area, yet market pressures favor commercial uses, the residential use would be established as the dominant use with commercial space allowances contingent upon construction of housing.

A second, multi-use approach would be to adopt vertical zoning provisions. In the former proposal, the determination of the horizontal and vertical siting of the various uses is left to the discretion of the developer. In many instances, however, closer control over the location of the various uses is desirable. The area immediately north of the Concord BART Station provides a good example. Here, for instance, it would be desirable to develop a pedestrian-oriented link between the Station and the Plaza area, which would combine street level shops below with office, residential or some combination of these uses above. With the vertical zoning technique, land use could be designated level by level. Here again, in order to promote better land utilization and the desired mix of land uses, allowance of the ground level use could be made contingent upon provision of the upper level uses.

MANDATORY DENSITY. Present zoning provisions establish an upper limit on residential density and on commercial floor space, but do not establish a minimum level of development. In many instances, this regulatory situation has led to dispersal of development and under-utilization of land and, in turn, land use patterns which are difficult to provide with adequate transportation services. Mandatory density provisions would establish either a minimum allowable number of dwelling units or a minimum floor area ratio. Care should be taken that the minimum level established is not economically unrealistic. The minimum level, however, need not be tied to current market conditions, but could instead be seen as a means of holding land in reserve until such time as greater economic utilization is justifiable.

LAND CAPACITY ORDINANCE. Since development has consumed most of the level, and relatively unconstrained lands in Concord, pressures are being exerted to use the more rugged, outlying areas of the City. Under conventional zoning a uniform density, usually quite low, is assigned to these lands. Since it is infeasible at the time zoning decisions are made to conduct a detailed site-by-site analysis, situations often occur where major portions of the site are unbuildable due to steep slopes, unstable soil conditions, or other hazardous situations. The land, however, is sold on the basis of the allowable density and the subsequent buyer wishing to develop the site may find it economically necessary to build close to the maximum number of units allowed in the zoning provisions since he has paid a price for the site based on this assumption. He also often finds it necessary to site all of these units on a small portion of the total site, producing crowded conditions and an unsatisfactory site plan. The City's present density transfer provisions encourage this process.

The consultants recommend an alternative regulatory approach which bases density on the specific site conditions. Under such an approach, a land capacity ordinance is adopted which specifies which types of lands are buildable or unbuildable. This is similar to a slope-density ordinance, except other factors can be introduced into the calculations including slope instability, presence of seismic limitations,

significant habitat values, and the degree of onsite access to the remaining, unconstrained lands. Since the allowable density is not determinable until there has been thorough site analysis including studies by a soils engineer and geologist, the prospective land buyer is more likely to secure an option enabling him to undertake the necessary studies with the sale price contingent upon the findings of the site analysis. The result is a more realistic pricing of the land and, hopefully, lower housing costs and decreased pressure for overutilization of the site.

The land capacity ordinance could also incorporate provisions which would consider offsite transportation factors. The allowable density could be adjusted downward where specific site conditions produce a land use pattern difficult to serve by public transit, i.e. isolated pockets of housing. In turn, the densities could be adjusted upward where conditions permit good transit access. Examples include allowing concentrations of higher density housing along major transit routes or in a pattern which makes service by dial-a-ride buses convenient and economical.

REVISED PARKING REQUIREMENTS. The present tendency in zoning ordinances is to establish stringent parking requirements for both residential and non-residential use, since high dependency and thus high use of the private automobile is routinely anticipated. Although these present parking requirements vary by the type of housing or type of commercial establishment, the provisions do not take into account differences in accessibility to transit accommodations. Either consciously or unconsciously, these provisions thereby serve to further reinforce the dependency on the private auto.

The Concord ordinances have taken an initial step in the direction of transit recognition by reducing residential parking requirements in the Special Central Business District when units are located within 1000 feet of a BART station. However, if local transit is to function properly, and within reasonable cost parameters, these parking policies and provisions should be further altered and a deliberate effort made to curtail auto use. Following revision and adoption of changes to the General Plan, a complete reevaluation should be made of present parking policies. Downward adjustment in the required number of parking spaces should be instituted in the Central Area, and along major transit corridors. For example, commercial uses within one block and residential development within three blocks of a transit route should be considered as within a high transit service zone, and less stringent parking standards should therefore be required. The parking standard should be adjusted to require both a minimum and maximum number of allowable spaces. Furthermore, the standards should also be adjusted to minimize parking requirements for employees. In other words, the parking standards should reflect the fact that the work trip can more readily be accommodated by transit and, therefore, the number of spaces required for employee parking reduced.

IN-LIEU TRANSIT FEE. In conjunction with the revision of the City's parking standards, consideration should also be given to including a provision for in-lieu transit fees. Under this provision, the developer of a new facility within a specified transit service zone would pay a fee for transit improvements which would relate to his parking provision cost savings accrued from the transit-related, downward adjustment in parking requirements. There is a sound rationale for this approach from both the public's and the private investor's point of view. By reducing the on-site parking requirements, the developer's site improvement costs are reduced and potential site utilization increased since the space formerly required for parking can be devoted to other uses. In many instances, this situation can produce a substantial economic gain for the investor. In turn, a higher level of utilization is produced which reinforces transit use and also produces greater tax revenues. Moreover, both the public and developer benefit from improved transit accommodations financed through the in-lieu payments. The following section on financing provides a further discussion of this method.

FINANCING METHODS

Initial cost estimates for roadway improvements needed in the City to provide a balanced auto-transit transportation system which will meet projected 1990 needs are in range

of $35 million. In addition to these costs, the Contra Costa Local Transportation Implementation Program has estimated the necessary capital expenditures for a full bus system providing both fixed route and dial-a-ride service for central Contra Costa County at $11.3 million. The annual operting cost of the County system, if fully implemented, is expected to reach $8.5 million. The County proposal would provide a level of service nearly equivalent to that proposed in this study. The chief difference is that this study recommends a more extensive network of fixed routes to serve the projected 1990 travel demands generated by population growth. These additional fixed routes in effect replace much of the more costly dial-a-ride service proposed in the County by more efficient fixed service.

In addition to transit costs, the construction costs of the major bikeway network suggested in this report are estimated at $361,000. This figure excludes any right-of-way aquisition costs.

Available and potential sources of financing for the transportation improvements proposed in this report are described below:

TRANSIT SYSTEM. Discussions of potential sources of public revenue for transit system implementation are categorized below by level of government responsible for funding:

Federal Funding

Over the past two years, concerted efforts have been made by the transit industry and by leading proponents of public transit in Congress to achieve a higher degree of federal financial assistance for local transit. In 1973 a major breakthrough was achieved when the federal share of a qualifying project's capital costs was increased from two-thirds to 80 percent. The County anticipates that such a grant totalling $9.5 million will be made available to cover 80 percent of the projected $11.3 million capital cost of the proposed County system.

This year, the thrust of the legislative effort is two-pronged: (1) to get significantly more total federal dollars appropriated for transit, and (2) to authorize the use of federal funds to pay part of the systems' operating costs in addition to the capital costs that now are fundable under the existing Mass Transportation Act.

Since the legislative process still is in flux, it is still impossible to predict the final shape of the transit legislation that will emerge this year, either in terms of the total appropriation or in terms of the formula for providing operating assistance. It does appear fairly certain however, that higher funding levels will be established, and that some form of operating assistance will now be provided.

It is likely that the ultimate legislation will be a synthesis of provisions found in two bills, H.R. 12859, and Senate Bill 3719. The former provides a national authorization of $11.6 billion over six years. The latter would provide a national authorization of $15.6 billion over 5 years. Both bills would leave to local government the decision as to how much of an area's total allocation would go to capital costs and how much to operating costs.

Preliminary and informal conversations have been held with Federal Urban Mass Transit Administration Commission staff which indicate that the expected $9.5 million grant toward the County system capital costs should be fundable within the expected appropriation level even if it was to be limited to the $11.6 billion proposed by H.R. 12859. However, there is a clear disposition at UMTA for the expansion of existing agencies, where practical, as opposed to the creation of new operating agencies. This does not preclude the operation of a transit district for planning purposes, which then could contract with an operating agency for service (for example, AC Transit). This is the kind of arrangement that exists between the Marin County Transit District and the Golden Gate Bridge Highway and Transportation District. The former is responsible for transit planning within Marin County and the latter provides service pursuant to a contract with the Transit District.

The level of operating subsidy that might be available under the proposed legislation for transit operations in central Contra Costa County cannot be accurately predicted. Under either legislation the division of grant funds between capital costs and operating subsidies would be determined by local option within a geographical allocation determined either by population or by a combination of population, ridership and vehicle miles.

An assumption about the level of federal funding, however, does provide a basis for estimation of the order of magnitude of federal subsidy that would likely be available to the Central Contra Costa Transit District. Of the two bills mentioned above, the bill funded at the last lesser level generated about $2 billion per year for six years, or a total of $12 billion. The Transit District's proportion of the nation's population is approximately 15%. If half of the $12 billion is made available for capital grants, the District's proportion of the grant funds, based on population, would be $9 million. This is approximately the amount assumed in the District's funding program, an amount which the federal officials found to be very reasonable.

The per capita basis is especially conservative because a large proportion of the population will not be in competition for these funds, either because the areas are not urban or because application is not made for capital grants for transit districts. If, for example, approximately 60% of the population is in areas applying for transit grant assistance, the transit district would receive $15 million based on a per capita allocation. This figure suggests that even if the capital costs of the district were larger than anticipated, the federal funding of 80% of the costs would still be reasonable.

The order of magnitude of federal subsidy that might be available for operating expenses can be similarly estimated. If half of the $2 billion per year program were allocated for operating subsidies and 60% of the population was included in areas applying for such assistance, the per capita share for the district would be approximately $2.5 million. This amount, however, would presumably have to be shared with BART and, thus, $1.5 million appears to be a more reasonable estimate of the order of magnitude of federal subsidy that might be made available to the District. Such an amount would cover approximately 20% of the operating deficit, a conservative percentage in the light of Department of Transportation goals.

As a final note in the discussion of federal sources for transit operations, the Federal Aid to Urban Areas (FAU) program should be noted. Some portion of these funds could be used by the County. However, they are also usable for other purposes and are discussed in this report as a source of funding for the road system.

State Funding

Beyond the 80 percent federal share, the remaining 20 percent of transit capital costs must be matched by state funding. The County foresees this portion totaling almost $2.25 million over the 1974-79 period, and expects that the money will be made available from Transportation Development Act (TDA) funds administered by the Metropolitan Transportation Commission (MTC). An additional annual TDA allocation for operating costs of $961,000 is also anticipated.

MTC funds are derived from the 25 percent local sales tax revenue obligated to transit services (6.5 percent total). At the present time AC Transit and BART are the only eligible East Bay recipients of these state grants. By cooperative or contractual arrangements with AC Transit, it is anticipated that these funds will be available to the County service area. The County expects that as the financing situation with BART and AC Transit becomes clarified, state assistance will increase due to a reallocation of TDA funds and newly generated revenue sources.

Capital grant monies provided by MTC have been set aside in previous years and are fairly certain in nature. MTC indicated that the anticipated annual operating subsidy to the County of $961,000 is a reasonable estimate.

There is also the possibility of other state funds being shifted to transit subsidization. In June, the California voters approved the diversion of limited amounts of state gasoline tax funds to transit uses subject to County-wide voter approval.

However, eligible transit must be fixed rail or, possibly, separate right-of-way systems. Following this course would not produce any additional monies in the County, but it could tend to increase the proportion of the County's funds spent in the urban areas of the County, including Concord. Some of the transit system improvements proposed here would be fundable if the County chose to divert the funds.

Local Funding

Local sources of revenue will consist of transit fares and property taxes. Farebox revenues from the County bus system proposal are expected to rise from four percent of operating revenues in the initial year, to 20 percent when the system comes into full operation. Although the implementation study was based on a 25¢ fare in keeping with the early 1974 fare structures of AC Transit and the San Francisco Muni, an increase is now under consideration due to a sharp rise in projected operating costs.

It is expected that a flat fare will be recommended for all fixed-routes and a higher level of fare, commensurate with the higher level of service, will be charged for dial-a-ride service. Transfers between the two types of service will be free with the payment of the higher fare. Some consideration for special and/or reduced fares will be provided for senior citizens, children, and students. It is hoped that passengers transferring between the transit system and BART rail or express bus service will receive a 50 percent transfer discount, comparable to the transfer concept currently used by AC Transit and BART.

There is currently no public transportation system in central Contra Costa County and it is difficult to predict ridership for an area which is both physically and psychologically oriented to automobile travel. In this study, however, since farebox revenues are expected to account for at most only 20 percent of total operating revenues, ridership levels will not have a significant impact on total revenues.

Imposition of a special property transit tax at the rate of 35¢ per $100 assessed valuation will be voted on in the November 1974 election. The tax is expected to provide the major portion of the operating subsidy required, but could be decreased if federal and state assistance and farebox revenues allow. If, on the other hand, operating cost estimates or assistance assumptions are inaccurate and a subsidy larger than that generated by a 35¢ tax rate is required, the rate will have to be increased or the level of service curtailed.

In estimating property tax revenues for the 1974 to 1979 period, the County has assumed that the property tax base of $1 billion and therefore, the annual yield of $3.5 million will remain constant (except for inflation). While in accordance with the constant dollar assumption of all expenditures and revenues, such an approach does not account for a real increase in the tax base. Recent growth in central Contra Costa County indicates that such an increase should be projected due to three factors: (1) the rapid appreciation of home values, (2) increases in economic activity, and (3) population growth. Based on a comparison of growth in assessed valuation for the majority of the County with charges in the consumer price index for the San Francisco Metropolitan Area, this real growth (with constant dollars) has evidenced a compound rate of 8.9 percent per year for the past four years.[6] Applying this growth factor to the 1975-76 tax base yields the increases in expected revenue as shown in Table 3.

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[6] The 1970-71 and 1974-75 assessed valuations of El Cerrito and Richmond were excluded from total County assessed valuation for a total increase of $743,205,181 for these four years. Attributing 28.3 percent of this increase to changes in the consumer price index yields a real increase of $532,878,121 which is calculated at a rate of increase of 8.9 percent per year compounded.

TABLE 3: PROJECTED REAL INCREASE IN PROPERTY TAX BASE FOR CONTRA COSTA COUNTY TRANSIT DISTRICT
(X 1000)

Fiscal Year	Tax Base	Revenues at 35¢/$100 AV ($ millions)	Increased Revenues (35¢/$100AV)
1975-76	$1,000,000	--------	---------
1976-77	$1,089,000	$3.81	$ 311,500
1977-78	$1,186,000	$4.15	$ 651,000
1978-79	$1,291,000	$4.52	$1,018,500

Source: McDonald & Smart, Inc.

Summary

The fiscal impact of the transit district must be considered over time in terms of the cash flow to and from the district. A tentative cash flow chart is presented in Table 4. State TDA funds, federal subsidies and farebox revenues are aggregated in column 2 and assumed to remain constant (in constant dollars) once the system is fully implemented in 1978-79.

Operating expenses, in column 3, are also assumed to be constant after full operation is reached. The annual transit system deficit, shown in column 4, is projected to be almost $4 million.

By the time of full operation, however, the tax base of the area will probably have grown sufficiently to cover such a deficit with the 35¢ tax rate currently planned. Further projections of the tax base must be used with caution, but the consequence of an enlarged base, shown in column 7, is a gradual decrease in the tax rate required. This report conservatively estimates that the tax base will increase by about 50 percent (roughly proportional to the population increase expected), and that the tax rate will remain at 35¢.

The tax rate that will be required to subsidize the district could also be significantly higher or lower if the assumptions about operating costs or federal and state subsidies are inaccurate. Comparison with AC Transit appears to be a reasonable check. The district's consolidated rate has been 31.1¢ per $100 AU for several years. However, the recently signed labor agreement and the prior agreement both were at levels that made the 31.1¢ rate unrealistic. The new consolidated rate has been set at 53.6¢. A very important factor is that the AC tax rate is set without any federal operating subsidy. The passage of a federal transit bill will presumedly allow for a reduction in the rate.

The AC Transit District service area is better suited to heavy patronage, but we have seen that fares are not a dominant financial factor. Contra Costa County will have a stronger tax base and, more significantly, fewer bus routes (per square mile and per capita) are planned. The comparison suggests that the County district will be able to operate within a 35¢ tax rate and, perhaps, later either lower that rate or improve the level of service.

In addition to farebox revenues and the imposition of a special County property transit tax, several other possible local revenue sources should be considered. These sources however, would generally be limited to financing right-of-way acquisition and roadway improvements to facilitate transit service. The revenue would not go to the transit district, but rather would be used to defray the thoroughfare system costs discussed later in this report. The first of these is the in-lieu transit fee previously discussed in the section on regulatory approaches. Assuming a one-third reduction in the number of parking spaces required for various types of new development, and an in-lieu payment of $600 per eliminated space (roughly equivalent to the land and improvement cost of one parking space), in-lieu parking fees on the order of $2.7 million could be obtained from new developments by 1990 in retail, office, service and industrial space within areas directly served by the proposed transit facilities: This figure does not include in lieu payments for new residential development.

Consideration is now being given to designating portions of the Central Area as a redevelopment project area under the provisions of state law. Approval of the designation would

TABLE 4: TENTATIVE CASH FLOW ($1,000 Units and 1974 Dollars)[a]

	Operating Revenues (State TDA, Federal[b] and Farebox)	Operating Expenditures	Annual Deficit/ Surplus	Property Tax Revenue at 35¢	Total Annual (Deficit) Surplus	Required Property Tax Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1974-75	60	200	(140)	-----	(140)	------
1975-76	1400	1400	------	3500	3500	-----[d]
1976-77	2450	4900	(2450)	3810[c]	1360	22.5¢
1977-78	3100	6020	(2920)	4150	1230	24.6¢
1978-79[e]	3560	8500	(4940)	4520	(420)	38.2¢
1979-80	3560	8500	(4940)	4920	(20)	35.1¢
1980-81	3560	8500	(4940)	5360	420	32.3¢
1985-86	3560	8500	(4940)	8210	3270	21.1¢
With 50% greater County tax base than in 1975-76 :						
	3560	8500	(4940)	5250	310	32.9¢

a. Numbers may not add due to rounding
b. Federal subsidies for the years beginning with 1975-76 are assumed to be $240,000, $850,000, $1,040,000 and $1.5 million thereafter.
c. Except as may be required for contingency revenues.
d. With tax base escalated at rate of last four years (8.9% annually).
e. Full system implementation.

SOURCE: Contra Costa County Local Transportation Program, Supplement No. 1, for County Service Area T-2, August 1974.

make tax increment funds available to the Central Area. Transit related improvements such as the exclusive busway proposed in this report would be eligible costs.

Additionally, it is possible to establish a special assessment district in the Central Area, or in other commercial areas, to help finance transit improvements. Based upon current assessed values, a district comprising all of the proposed redevelopment area and the Sun Valley Shopping Center could produce $147,000 per year based on a one cent per $100 assessment.

A tax on car usage would appear to also be a logical source of transit revenue since the need for mass transit arises in part from increases in automobile travel, and major benefits will be enjoyed by those who still use their cars upon implementation of a mass transit system. It is, however, difficult to impose such a tax or user charge on automobile users. Local taxes on both gasoline and motor vehicle licenses require state legislative action as does a change in the local sales tax. Although parking meters or special parking taxes offer an alternative revenue source, they might have the negative effect of threatening the viability of downtown areas. Since outlying shopping centers do not have meters, they would have an advantage over the Central Area. One way of countering this affect would be the imposition of a transit service fee on all on-site commercial parking.

Another possible variation on a transit service parking fee would be to issue on-street parking permits within residential areas. In addition to being a revenue source, this technique would also serve as a means of discouraging multiple car ownership.

While none of these potential local revenue sources is sufficient by itself, together they do offer a means of helping insure that a better designed transit system and better service are realized than would otherwise be possible. This outcome in turn would produce more riders and, thus, faster and more convenient service.

BIKEWAY SYSTEM. Although funding for bikeways is available under several different grant programs at the State and federal levels, few grant programs are exclusively directed toward this purpose. Competition for funds under both discretionary programs and those designated for bikeways is high, although the number and amount of funds for which bikeways are eligible is increasing. The description of available funding sources considers separately those programs exclusively directed to bikeways, for which reasonable estimates of expected funding levels can be made; and broad grant programs, under which funding will depend largely on how aggressively Concord pursues available funds and on the administration policies of the different programs.

Funding Specifically for Bikeways

Three major existing sources of funds, specifically directed toward bikeways, are made available by the State of California. The State "Bicycle Lane Account" in accordance with the Mills Bill (SB 36) annually allocates a total of $360,000 among cities and counties for bicycle projects along local streets and highways. Projects funded must benefit the capacity or safety of the road. To date, the allocations have been made on the basis of population. As a result very small amounts are being granted on the average for proposed projects. The State Department of Transportation is currently considering larger allocations by grouping areas.

The Department of Transportation has also administered a minimum total of $360,000 per year to construct bikeways along State highways; a $700,000 total has been authorized for 1974-75. Again, qualifying bikeway projects proposed under this program involve a cooperative effort combining State and local funding, right-of-way provisions and construction engineering. Projects proposed by local agencies should be pursued through the Bicycle Coordinator in the District Office of the State Department of Transportation and must be part of a local master plan as a first requirement.

As of January 1974, at least two percent of SB 325 funds (derived from the .25 percent local sales tax revenue obligated to transit services) are directed to the building of bicycle and pedestrian facilities, unless the regional planning agencies have a more urgent need for the funds.

Total SB 325 funds accruing to the Metropolitan Transportation Commission this year are estimated at $37 million for which $400,000 has been allocated to local agencies for bikeways. Santa Rosa, for example, has funded its entire bicycle path system from such funds.

A bottom line estimate of that amount of funding which might reasonably be expected by Concord for its bikeway system should be based on these designated sales tax funds. With a population of approximately 100,000 in 1975, Concord will account for .47 percent of the projected State population total. On a per capita basis, this total would yield $5000 annually from the two Department of Transportation bicycle accounts. Metropolitan Transportation Commission SB 325 funds distributed among the nine Bay Area counties will approximate $35 million in 1975. If the minimum proportion of two percent is directed to bikeway projects, Concord would receive $14,300 based on a per/capita allotment. It can be expected that only between one third and one half of all California local agencies will apply for bikeway funding annually. Total funding from these programs designated for bikeways can thus be estimated at in the order of $40,000 to $60,000 annually.

Other Sources of Funding

There are various state and federal agency programs in which bikeways stand as one of a number of categories of fundable projects. The major federal funding agencies are the Departments of the Interior, Housing and Urban Development, and Transportation. Land and Water Conservation Funds are made available by the Department of the Interior (Outdoor Recreation) and administered through the State Parks and Recreation Department. These are 50 percent matching grants for the acquisition and development of all types of park and recreational facilities. The funding level for the 1973-74 fiscal year of $2,652,000 is expected to increase substantially to approximately $10 million for 1974-75.

The Housing and Community Development Act of 1974 will apply to a broad range of eligible activities including bikeways and is aimed at coming as close as possible to the revenue sharing concept. Total funding for 1974-75 of $1.5 billion has been authorized, but not yet appropriated. The distribution formula for cities of populations over 50,000 is based on variables of population, percentage of overcrowding, and poverty. Thus, local communities would evaluate their priority for bikeways in competition with other needs.

Bikeways are also eligible under the Department of Transportation Federal Aid Urban Funds which are usable for most transportation facilities other than construction and maintenance of local residential streets. Most on-street portions of the Concord bicycle trail system would be eligible for these funds. MTC acts as the administering agency, allocating money to projects with city council specified priority. The Contra Costa County share of such funds totaled $2.3 million for the 1973-74 fiscal year.

The 1973 Federal Highway Act provided no separate or new funds for bikeways. However, it authorizes the discretionary diversion of existing federal-aid highway funds, limited to $2 million per year, for each state to construct bikeways on federal-aid highway projects. Current funding policies on bikeways along state highways are not expected to be materially affected. Cities and counties may also use federal funds for bikeways at their discretion.

Finally, many local agencies are applying federal revenue sharing money to implement bicycle trail systems.

Aside from a small allocation of funds by the California Commission on Aging, other State funds applicable for bicycle trails are administered through the State Department of Parks and Recreation. Land and Water Conservation Funds from the Department of the Interior have already been mentioned. In addition to specific allocations of these funds, the Parks and Recreation Department has the option of setting aside special contingency funds. In 1972, a special fund of one half million dollars was allocated to seventeen bicycle projects through the State.

The Chappie-McDonald Bill (AB 3297), if signed by the Governor, will direct $3 million from the State General Fund to fund pathway projects (bicycle, hiking and other) through the Department of Parks and Recreation.

The probability of Concord receiving funds from these funding sources not designated exclusively for transit cannot be predicted, although the City should certainly pursue the funds. Their existence would appear to justify estimating bikeway project funding of an average $60,000 per year, with larger amounts as the City's population grows and bikeway funding increases. An average of $80,000 for sixteen years (1975-1990) would yield a total of $1.3 million for bicycle trails for Concord.

Summary

The construction cost of a bikeways system for Concord is projected to be $361,000. The costs of securing right-of-ways cannot be estimated without specific consideration of each segment of the system. The magnitude of funding that will probably be available was projected above to be in the order of $1.3 million, with approximately half of the amount attainable by 1982, the target date for completion of the transportation system. With the adoption of this plan, Concord would have a basis for aggressively pursuing funding. It would appear that the bikeways system should not require significant assistance from the City's general fund.

AUTO THOROUGHFARE SYSTEM. Even with implementation of the planned public transit system, the majority of Concord trips will still rely on the automobile. Hence, expenditures required for new thoroughfares and maintenance of the existing system must continue to be a major consideration in overall transportation system financing. Furthermore, the existing road system as used by automobiles and future modifications and additions to it will provide the necessary rights-of-way for buses.

Thoroughfare Capital Costs

It is estimated that the road system additions called for in the Concord General Plan would cost about $40 million (this sum includes only major thoroughfare construction and excludes local streets and any alternatives to Interstate Highway 680). Yet, even with the expenditure of this amount of money, the City's automobile circulation would remain inadequate due to the intolerable and increasing congestion that would pervail if transit was not introduced.

If the transit system is implemented, it is estimated that an expenditure of $35 million would bring the road system up to full standard. In contrast to the non-transit situation, the system proposed herein would be expected to have good performance assuming the diversion to public transit was adequate.

With the provision of transit however, it could appear reasonable to spread the total cost of roadway improvements over a time period longer than would be the case if the transit system were not to be built.

State Gasoline Tax Rebates

In 1972-73 Concord received almost $800 thousand dollars from the 7¢ per gallon state gasoline tax, as shown in Table 5.

The allocation of these funds is highly correlated with population. Table 5 shows the amount that the Concord area might anticipate receiving over time (third column) as its population grows.

TABLE 5: PROJECTED GAS TAX REVENUES

Year	Population	Rebate (Actual $)	Rebate (Constant $)	Capital Improvmnts Share
1973	94,000	795,000	795,000	525,000
1980	106,900	895,000	672,000	448,000
1990	122,700	1,028,000	475,000	317,000

Because the tax is a constant amount per gallon, the funds will become less significant over time due to the impact of inflation. Column 4 accounts for the inflationary effect and shows the tax rebate in terms of its real value in constant dollars.

In the past, state law required that a portion of gas tax

revenues be set aside for capital improvements, but this is no longer required under state law. Concord, however, is continuing to follow the policy of setting aside a portion of the funds ($ 525,000 out of $795,000 in 1973-4) for capital improvements. Assignment of the same proportion, two-thirds, to future capital improvements would yield annual funds of $448,000 in 1980, and $317,000 in 1990 and a total of $6.7 million over the sixteen year period.

Bond Funds

The City of Concord currently has $3.244 million from earlier street improvement bonds. These funds are available to help meet the costs of capital improvements ($35 million). Those projects that have already been approved by the City Council, and are to be paid for from these funds, are included in the $35 million list.

Current debt service on the bonds is about $900,000 per year, with some debt service obligations terminating in 1979 and 1985 and the majority soon after 1990. The dollars technically come from the state sales tax rebates rather than property taxes.

If the city wishes to fund additional road improvements utilizing bond funds, the following estimates are useful. Debt service on each $1 million of bonds is about $90,000 (6% bonds amortized over 20 years). Each $1 million funded by bond proceeds is equivalent to about 2.4¢ per $100 AV to the 1982 property tax rate and 2¢ to the 1990 rate.

City-County Thoroughfare Funds

City-County Thoroughfare Funds are derived from state excise tax funds allocated to the Counties. Since cities receive less money per mile of road for maintenance than does the County, City-County Thoroughfare Funds serve to equalize the availability of financial resources for the road system.

The County has been allocating $500 thousand of these funds per year since the fiscal year 1959-60. Distribution among the County's cities is primarily based on need, but some consideration is also given to spreading the funds as much as possible among all of the cities.

Each city submits up to five projects, each of which must be part of the city-county system, a network of roads designated by the County. Only major thoroughfares, but no freeways, are included.

Concord has received a greater share of the City-County Thoroughfare Funds than its proportion of the County's population would justify due to its growth rate and hence, its need for new roads. It appears reasonable to assume that Concord will continue to achieve about 15 percent more in funds than its' per capita share of the County's population would indicate, as shown in Table 6.

TABLE 6: CITY-COUNTY THOROUGHFARE FUNDS
(Constant Dollars, x 1000)

	County Funds	Concord Estimated Tax Share
1974	$500	$106 [7]
1980	418	79
1990	240	43
Total 1975-1990	$5920	1190

Federal Funds

The only federal program directly oriented to the provision of funds for local street improvements at the present time is the Department of Transportation's Federal Aid to Urban Areas (FAU). This program makes funds

7 Concord's "fair share" as estimated by the County Highway Division formula averaging the City's percentage of population, total assessed value, and maintained roads within the County. Projections are based on the City's percentage of total County population by the State Department of Finance augmented by 15 percent.

available for local streets and roads, transit projects, and state highways. Interstate highways and construction of local residential streets are excluded. Each county within the state establishes a technical advisory committee, composed of representatives of the mayors and public works directors, which sets up a three year transportation program. The Metropolitan Transportation Commission (MTC) approves the programs and acts as the administering agency allocating money to priority projects.

Contra Costa County received $2.54 million in these federal funds for the fiscal year 1973-74 which represented roughly a seven fold increase over the previous years funding. Funding for 1974-75 is $2.60 million, and is estimated at $2.63 million for 1976. Allocations within the State are based on relative proportions of urbanized population excluding communities of less than 5000.

These funds are not guaranteed, but they can reasonably be expected to be a continuing source of thoroughfare revenue for Concord. Other federal sources may come into being during the projection period, although roads are not as politically popular today as transit. Hence, the projections that follow are based on a per capita amount (in constant dollars) as a reasonable average. The estimates are, in fact, somewhat conservative since the national trend has been to direct a higher percentage of available highway funds to urbanized areas. This trend is expected to be reflected in the 1976 Federal Highway Act. Using the 1975 estimated available funds of $2.63 million and County population of 602,100 yields a per capita funding figure of $4.37. [8] Thus, Concord's share would be $467,000 in 1975, increasing to $536,000 by 1990 (See Table 7).

TABLE 7: FEDERAL ASSISTANCE TO URBAN AREAS FUNDS
Assuming 1975 level of funding ($4.37 per capita)
(Constant Dollars)

Year	Population	Average Concord Share
1975	100,000	$437,000
1980	106,900	467,000
1990	122,700	536,000
Total 1975-1990		$7,790,000

City General Fund

The City's general funds must supply whatever funds are required for expenses that are not paid for from other sources. Two primary sources provide the majority of the revenues in the general fund. The larger is the state sales tax rebate ($3.05 million in 1973-74). Our projections indicate that the increase in this revenue source between now and 1990 will be between $1 and $1.2 million. The property tax now supplies $2.68 million. Our forecast is an increase of about 50%, or $1.3 million, by 1990.

Summary

The revenues typically utilized for capital improvements in the road system are shown in Table 8. Bond proceeds on hand, city-county thoroughfare funds, federal assistance and gas tax rebates together are projected to provide $19 million by 1990. The inclusion of revenues not available until the latter portion of the eighties suggests that financial and time pressures will stretch out at least a minor portion of the road improvements past the target completion year of 1982. The road improvements needed are estimated to cost $35 million,

[8] This per capita figure is based on total County population and assumes that the proportion of urbanized population will remain constant.

leaving a deficit of $16 million.

TABLE 8: AUTOMOBILE RELATED CAPITAL REVENUES
(Constant Dollars in Millions)

	Existing Bond Funds	City-County Thoroughfare Funds	Federal Aid	Gas Tax Rebates
1974	$3.2	$.11	$.44	$.52
1982		.08	.47	.42
1990		.04	.54	.32
TOTAL 1974-90	$3.2	$1.2	$7.9	$6.7

Fiscal Summary for Transit, Bikeways and Thoroughfares

Our analysis suggests that the bikeways system can probably be funded from external sources, if Concord puts up the planning costs and actively pursues grant funds. The sources available for bikeways funding have funds adequate for Concord's needs. Thus, the only fiscal impact on Concord would be for miscellaneous costs incurred by the Public Works Department. It is anticipated that the Department's budget will be adequate for this purpose.

The City's taxpayers (though not the City itself) would incur a 35¢ per $100 AV tax for transit. Substantial benefits would also be enjoyed, however, and the evaluation of the impact of the transit-bike-auto system should include awareness of the advantages compared to an auto-dependent system. These advantages have been discussed earlier in the report, but one quantifiable benefit is discussed here.

The provision of transit is projected to yield a daily reduction in automobile miles driven in the Concord area as shown below:

	Miles Driven (Millions)	Diversion to Transit
1971	2.38	
1982	2.96	590,000
1990	3.41	680,000

In some cases the bus riding will be substituted for additional miles that would have been driven in the family car. In other cases, the presence of transit will allow a family to get along without a second car with its capital and insurance costs.

The top line in Figure 9 represents the dollar savings to Concord residents. It assumes (1) a 15¢ per mile operating cost (per IRS cost data), (2) that only half of the miles are driven by Concord residents, and (3) that transit fares will average 7.5¢ per mile. The savings reach $9.3 million annually in 1990 based on 124 million miles not driven.

The amounts paid to the transit district by Concord taxpayers are much smaller than these benefits. A $370 million tax base projected in 1980 will yield $1.3 million with a 35¢ tax rate. The 1990 tax bill will be $1.6 million at the same rate. The graph also demonstrates that transit is not an additional cost, but a shifting of expenditures from the private to the public sector.

The provision of an adequate road system would cost $35 million. Reducing this figure by all external funding sources and devoting all of Concord's projected increases in sales tax revenue to meet debt service would probably fall slightly short of required resources.

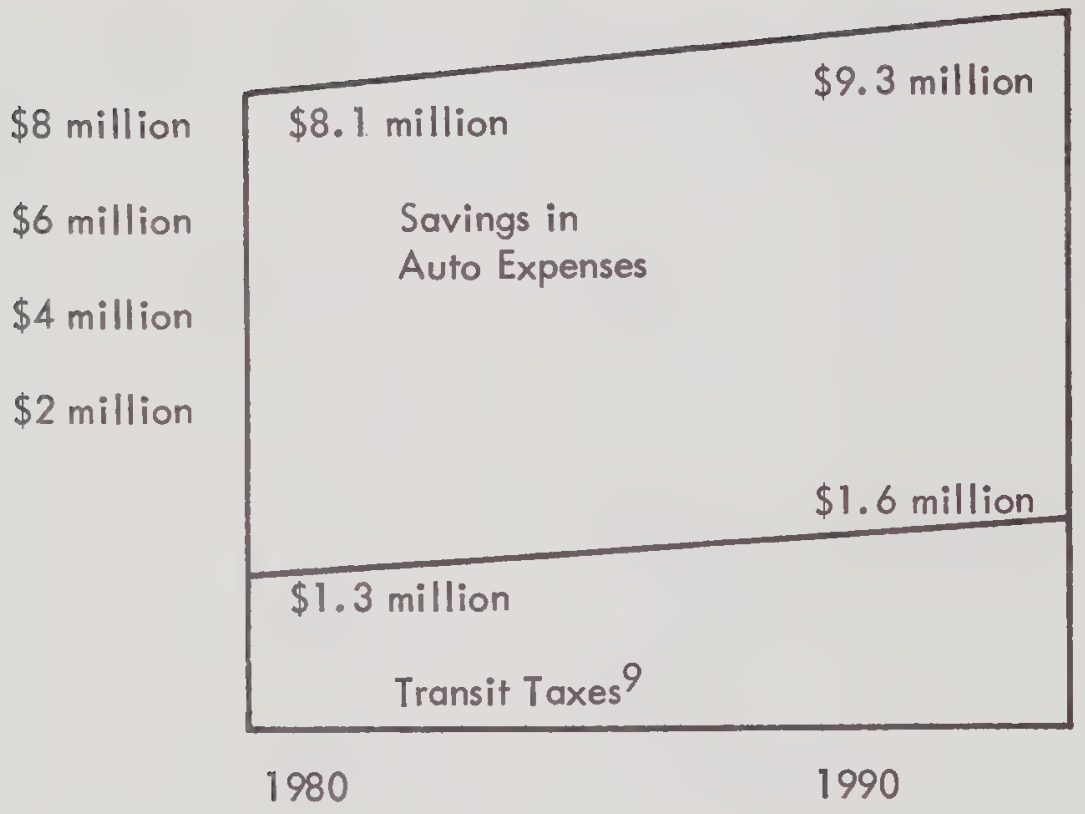

FIGURE 9: DOLLAR SAVINGS TO CONCORD RESIDENTS FROM DIVERSION OF A PORTION OF AUTO TRIPS TO TRANSIT

[9] Concord's transit district taxes at 35¢ per $100 AV

The automobile has become a very expensive means of transportation and will become even more so in the next decade in Concord. The primary problem is that without transit an adequate road system would have impossible dollar and social costs. The addition of transit, however, provides the basis for an adequate balanced system and after a decade Concord's capital road expenditures should lessen.

The possibility that the City will decide to seek revenues by taxing some facilities which will receive "windfall" benefits from transit has already been discussed. Payments in lieu of parking spaces, a redevelopment area designation, special assessment district for benefited areas, etc. have been mentioned. Four million dollars would appear to be a reasonable amount to be raised through means such as these between now and 1990.

Concord has met some of its road funding needs in the last decade by devoting increases in the sales tax revenue to bond debt service. The cost to the general fund is the same with this approach, but it serves as a policy to constrain expenditures to a level that will not result in an increase in the tax rate. The annual cost of debt service on these bond amounts is given below.

Bond Amount	Debt Service
$16 million	$1.4 million
12 million	1.1 million
8 million	.7 million

It can be seen that the anticipated increments in the sales tax revenue between now and 1990 ($1 to $1.2 million) would likely allow for debt service on the majority of the needed funds.

Concord will thus be faced with several choices:

1. Should "transit benefit" taxes be sought to defray a portion of the costs?

2. Should thoroughfare capital improvement spending be limited to increases (or some portion of the increases) in sales tax revenue?

3. Should some of the "needed" road improvements be deferred past 1990?

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